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University of Tabriz

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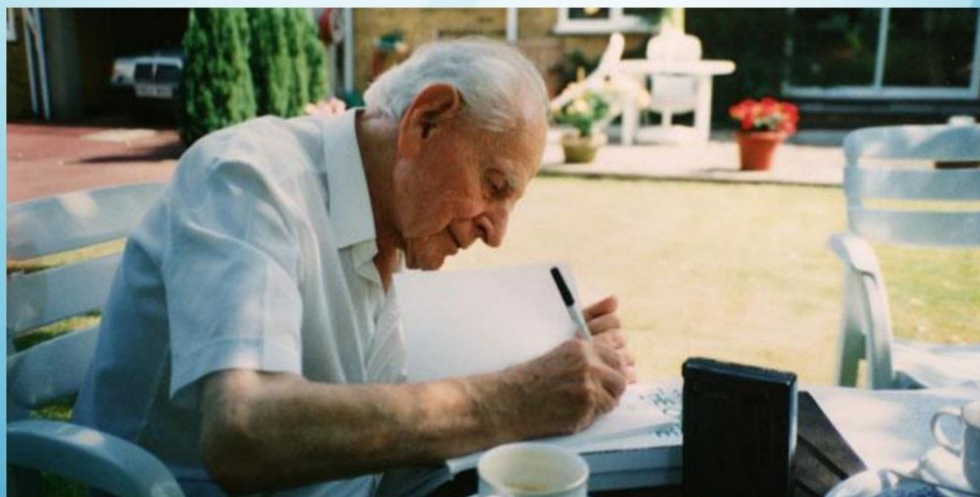
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Special Issue: Critical Rationalism



Karl Popper (1902-1994)

picture courtesy of Professor Adam Chmielewski (University of Wroclaw, Poland)

Date: July 29, 1994

Place: Popper's home, Kenley, UK, the day after his 92nd birthday



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Special Issue

Critical Rationalism

Guest Editor: Ali Paya

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Editorial Note

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Almost ninety years ago and upon the publication of *Logik der Forschung*, (Popper 1934), one of the influential philosophical schools of the twentieth century, Critical Rationalism was born. The founder of this school, Karl Raimund Popper (1902-1994), regarded it as a ‘way of life’ (Popper 2008: 200-201, 1963/2002:206) whose main aspects are as follows:

Critical rationalism is a quest for knowledge and truth, for ‘emancipation through knowledge’ and ‘spiritual freedom’ (Popper 1963/2002:175).

The critical attitude ... seeks undogmatically to subject all attitudes, ideas, institutions, and traditions, along with ... knowledge and ... freedom, to critical examination and appraisal (Popper 1963/2002:135, 151, 122, 127; 1945/1966: vol. II: 224–7).

[Critical] rationalists are those people who are ready to challenge and to criticize everything, including ... their own tradition (Popper 1963/2002: 122).

Critical rationalists emphasise the need to recognise everybody with whom one communicates as a potential source of information and reasonable argument and to take the attitude that ‘I may be wrong and you may be right, and by an effort we may get nearer to the truth’ (Popper 1994, xii; 1945/1966, vol. II: 225).

Critical rationalism has made many great contributions to various fields of intellectual activity, including epistemology, ethics, political philosophy, philosophy of the empirical sciences, philosophy of logic, philosophy of mathematics, philosophy of social sciences, philosophy of art, philosophy of history, and many more. It has also offered novel solutions to a number of major philosophical problems. Popper's proposed solution for the problem of induction (Popper 1959/2002), his augmented criterion of demarcation which demarcates contentful knowledge claims from claims which cannot be critically assessed (Popper 1959/2002:1979), his propensity interpretation of probability (Popper 1983), his powerful argument against metaphysical determinism (Popper 1982/1988), his schemata for the growth of knowledge, depicted below, $(P_1 \rightarrow TS \rightarrow EE \rightarrow P_2)^1$, which is based on the central idea of 'learning from errors' and is equally applicable to both developing our theoretical knowledge and improving our 'know-how' (Popper 1979: 1994/2002, 1999), his championing the regulative idea of truth as the main goal of all knowledge pursuits, his defence of the open society and analysis of the ills of tribalism, despotism and totalitarianism, which are the likely products of closed societies (Popper 1945/1966), his decisive rejection of the traditional 'definition' of knowledge, namely, "knowledge is justified true belief," by demonstrating the impossibility of conclusive justification (Popper 1963/2002: 1979), his emphasis on the importance of efforts for reducing people's suffering in place of trying to make them happy and his insistence on piecemeal social engineering as against utopian social engineering (Popper 1945/1966: chs. 3: 17, 24), his metaphysical model of the three worlds that was also a bold and innovative move towards reformulation of epistemology (Popper 1979), his interactionist theory of mind and body (Popper & Eccles 1981/1985), his method of situational analysis for the social sciences (Popper 1994: ch. 8), and many more novel ideas introduced by Popper and his students and fellow critical rationalists, are powerful testimonies to the fertility and logical depth of critical rationalism.²

Critical rationalism is popular among many scientists and acclaimed by the general intellectual community (Bartley 1998, Ch. 12).³ Each year, many books and papers on various new horizons that critical rationalism has opened up, and numerous fresh problems which are successfully tackled by it are published by critical rationalists all over the world. The present collection of scholarly papers is yet another case in point.

The idea of producing this special issue was suggested to me by Dr Muhammad Asghari, the editor of the *Journal of Pazhohesh ha-ye Falsafi* (the *Journal of Philosophical Investigations*), Tabriz University, in the summer of 2022. Shortly afterwards, a call-for-papers poster for the special issue was placed on the website of the Journal and, at the same time, efforts were made to invite some senior critical rationalists directly to contribute to the special issue. In this task, and subsequently, in almost all the other stages of preparing this special issue, David Miller and Jeremy

¹ In this diagram 'P' stands for 'Problem', 'TS' for 'Tentative Solution' and 'EE' for 'Error Elimination'.

² For the notion of 'logical depth' see Bennett 1990.

³ Dr. Rod Thomas has kindly drawn my attention to this interesting reference.

Shearmur greatly assisted me. I am most grateful to both of them. My thanks also to Dr Asghari for his initiative to produce the special issue. Some scholars in other countries also helped introduce possible candidates for contribution to the special issue. I should like to thank Professors Dimitris Dimitrakos, Stathis Psillos, Veli Mitova, Kiichi Tachibana, David Papineau and Yasuyuki Matsunaga in this respect.

All papers accepted for the special issue were subjected to a rigorous review process. Most of the contributors also acted as referees for the other papers. My thanks to all of them for their dedicated efforts to help with the arduous task of not only reviewing the original versions of the papers sent to them but also kindly commenting on the second or sometimes even third version of the revised papers. Some of the contributors reviewed two and some even three papers. Apart from the contributors, I received a great deal of assistance from some external reviewers. I wish to thank Professors Hashem Rafii-Tabar, Mohammad Ardeshtir, Kambiz Badie and Philip Benesch, Doctors Graham Dampier, Hubert Cambier, Dr Thodoris Dimitrakos, Rod Thomas, and Ali Navvabi in this respect.

In the last days of preparing the proofs of the submitted papers to be inspected by their authors before publication, the contributors received the sad news concerning the death of a prominent critical rationalist and close student of Popper, Professor Ian Jarvie, who was also a contributor to this issue. Dr. Jeremy Shearmur has kindly written a short obituary for the late Professor Jarvie. My special thanks to him and to Mrs. Pam Sheamur, who provided the photograph that accompanies this obituary.

The contributors had been asked to provide a short biography with an accompanying photograph. The short biographies are of varying lengths; some shorter, some longer. I decided to use them as they are rather than imposing a standard format on them. Two of the contributors requested that their pictures not be included.

Of the papers included in this issue, two were based on a debate between Jeremy Shearmur and Ali Paya. The debate which was held on 5th June 2022, had been organised by The Islamic Cultural Center of Northern California (ICCNC). The paper contributed by Professor Jarvie was based on the transcript of one of his latest lectures, presented at the Asian Roundtable on Philosophy of the Social Sciences in 2022. David Miller's paper is a revised version of a paper he had presented at a colloquium in 2018. The rest of the papers that appear in this special issue are exclusively written for it.

It has been a pleasure to act as the guest editor for this special issue. 'I hope you enjoy reading the papers which appear in it as much as I enjoyed putting them together'.¹

¹ I have borrowed this rather nice sentence from Schlager 2018, 220.

References

- Bartley, W. (1990). *Unfathomed Knowledge, Unmeasured Wealth*, Open Court.
- Bennett, Ch. (1998). “Logical Depth and Physical Complexity”, in Herken, R. (ed.), *The Universal Turing Machine – a Half-Century Survey*, Oxford University Press.
- Popper, K. (1945/1966). *The Open Society and Its Enemies*, Routledge.
- Popper, K. (1959/2002). *The Logic of Scientific Discovery*, Routledge. Originally published as *Logik der Forschung* in 1935, by Verlag von Julius Springer.
- Popper, K. (2008). *After the Open Society: Selected Social and Political Writings*, edited by J. Shearmur & P. N. Turner, Routledge.
- Popper, K. (1963/2002). *Conjectures and Refutations*, Routledge.
- Popper, K. (1982/1988). *The Open Universe: An Argument for Indeterminism*, Routledge.
- Popper, K. (1983). *Realism and the Aim of Science*, Routledge.
- Popper, K. (1994). *The Myth of the Framework: In Defence of Science and Rationality*, Routledge.
- Popper, K. (1994/2000). *In Search of a Better World*, Routledge.
- Popper, K. (1999). *All Life Is Problem-Solving*, Routledge.
- Popper, K. & Eccles, J. (1981/1985). *The Self and Its Brain*, Springer-Verlag.
- Schlager, E. (2018). Editorial Note, *The Policy Studies Journal*, 46(2), 218-221.



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Georgios Archontas is an adjunct Professor at the European Communication Institute and Head of Educational Programs at the Center for Liberal Studies in Athens. His doctoral thesis focused on Friedrich Hayek's contributions to assessing institutional arrangements. He has taught Institutional Theory, Global Economics, and Modern Public Sphere Issues at the University of Peloponnese and the University of Athens. He co-founded the Open Society Club, an initiative led by Greek academics and active citizens who support the principles of liberal democracy, liberalism, the rule of law, human rights, and civil society. Additionally, he co-founded LearnLiberty.gr, an educational website dedicated to classical liberalism principles. He oversees the Greek Economic Experts' Panel, an influential monthly survey on economic theory and policy. Furthermore, he has more than 20 years of experience as a political consultant and speechwriter for prominent Greek politicians.



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William Berkson did his Bachelor's degree at the University of Illinois, Champaign, his hometown. He completed his PhD in philosophy at the LSE, under Karl Popper. He then taught college, and then was long Director of the Jewish Institute for Youth and Family, where he published texts on Jewish values. He is also author of three books, one on Popper, and is now retired.



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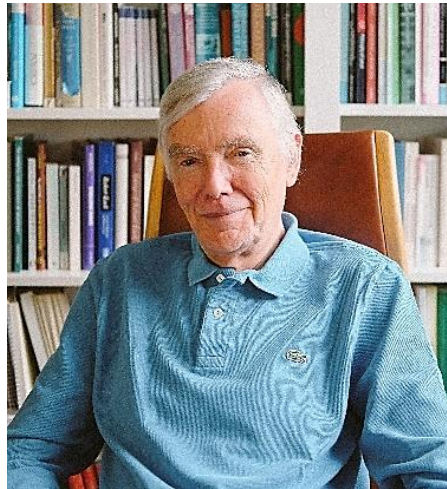
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Donald Gillies studied mathematics and philosophy at Cambridge as an undergraduate. In 1966, he began graduate studies in Professor Sir Karl Popper's department at the London School of Economics, and he completed his PhD on the Foundations of Probability in 1970 with Professor Imre Lakatos as supervisor.

From 1968 to 1971, he was a Fellow of King's College, Cambridge. In 1971 he joined the Department of History and Philosophy of Science at Chelsea College, University of London. As a result of various mergers, he became a member of the Philosophy Department at King's College London in 1992. In 1994 he was appointed Professor of Philosophy of Science and Mathematics. In 2004 he transferred to the Department of Science and Technology Studies at University College London. He retired in 2009 and is currently an Emeritus Professor at UCL.

His main research areas have been philosophy of science, particularly the foundations of probability, and philosophy of logic and mathematics. From the mid-1980s, he began researching into the interactions between artificial intelligence and various branches of philosophy, including logic, scientific method, probability and causality. In 2000 he became interested in how philosophy of science applies to medicine and has worked in this field for two decades. Three of his books are *Artificial Intelligence and Scientific Method*, Oxford, 1996, *Philosophical Theories of Probability*, Routledge, 2000, and *Causality, Probability, and Medicine*, Routledge, 2019. He has also edited and contributed to a collection on *Revolutions in Mathematics*, Oxford, 1992.

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Ian Jarvie †

For a short account of the late Professor Jarvie's life and work, please refer to the obituary written for him, exclusively for this special issue, by Professor Jeremy Shearmur.



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Makoto Kogawara is an Emeritus Professor at Kagoshima University and Kitasato University, Japan. He was born in 1947. Majored in Popperian philosophy and, for a long time, studied the Popperian philosophy and engaged in translating many books of critical rationalists (Popper, Miller, and Bartley) into Japanese. His most recent work in this field is a Japanese translation *The Open Society and its Enemies*. His publications (in Japanese) include *An Adventure of Argumentative Reason* (Miraisha, 1993), *Popper: Critical Rationalism* (Kodannsha, 1997), and *Falsificationism* (Tohokudaigakushuppankai, 2010).



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For almost forty years, David Miller taught logic, and some other things, at the University of Warwick. He has been a visiting professor at universities and research institutes in Argentina, Brazil, Colombia, Hungary, India, Italy, Mexico, Thailand, and the USA, and has lectured in many other countries. His publications include *Popper Selections* (Princeton 1983; translated into 12 languages), of which he was the editor; *Critical Rationalism: A Restatement & Defence* (Open Court 1994); *Out of Error* (Ashgate 2006; paperback edition, Routledge 2017); and *Karl Popper: A Centenary Assessment* (Ashgate 2006; paperback edition, College Publications 2016), which he edited in collaboration with Ian Jarvie and Karl Milford.



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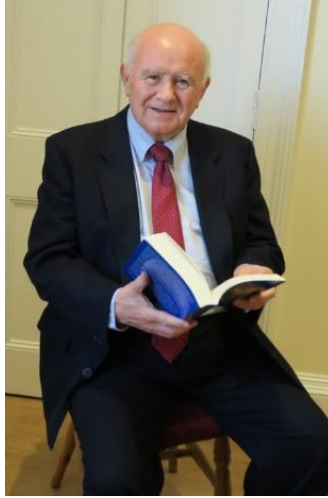
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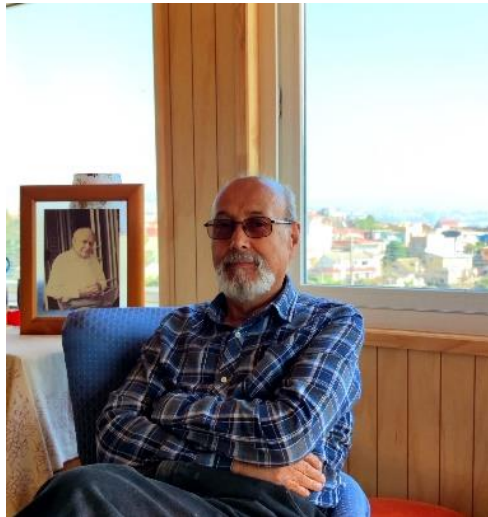
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Obituary

Ian Charles Jarvie†
(8th July 1937-16th May 2023)



(Picture: Courtesy of Mrs. Pam Shearmur)

Ian Jarvie, of whose death we have just heard, was a remarkable man. He studied anthropology at the London School of Economics as an undergraduate, and then wrote his Ph.D., under Karl Popper, applying a Popperian approach to issues in anthropology. (See his *The Revolution in Anthropology*.) This work offers not only an interesting theoretical treatment of problems in anthropology to do with cargo cults. It offers also a sustained discussion and appraisal of Popper's methodological ideas in the context of concrete issues in the social sciences. *The Revolution in Anthropology* was followed by other volumes tackling related topics, such as *Concepts and Society* and *Rationality and Relativism*.

After a Period working as Popper's assistant at the L.S.E., Jarvie took up a position at the University of Hong Kong, later moving to York University, Toronto, where he remained for the rest of his career. In Hong Kong, he became involved in fruitful life-long collaboration with Joseph Agassi (whom he had known from the L.S.E.). This led to papers on such topics as 'The Rationality of Magic'; to their many-volume edition of Ernest Gellner's papers; to their collection *Rationality: The Critical View*; and to their joint book on *Critical Rationalist Aesthetics*. Jarvie was also editor, with Sandra Pralong, of *Popper's Open Society after 50 Years* and – with Karl Milford and David Miller – of the wide-ranging three-volume collection, *Karl Popper: A Centenary Assessment*.

Jarvie's own book, *The Republic of Science*, is worth particular mention as offering a striking partly social interpretation of Popper's epistemology.

Not only did Jarvie write extensively on issues to do with anthropology and critical rationalism (especially on the philosophy of social science). But he wrote also numerous articles, and published several books, on the sociology and philosophy of film, including *Philosophy of the Film: Epistemology, Ontology, Aesthetics*. (See, for a list of Jarvie's extensive publications: <https://jarvie.info.yorku.ca/files/2019/01/ListofPublications.pdf?x48812>)

In addition to all this, Jarvie played a key role as managing editor of the major journal *Philosophy of the Social Sciences*, of which he was one of the founders. This journal was significant not only as the locus of debates in the philosophy of social science, but also because of the various exchanges that it contained on issues to do with critical rationalism more generally.

Jarvie was a man of considerable achievement, but of great modesty. He played a really important role in the development of critical rationalism in the twentieth and twenty-first centuries. He will be sorely missed.

Karl Popper in Africa: Liberal-Communitarianism as Ideology for Democratic Social Reconstruction

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ABSTRACT

This paper examines the liberal society that Popper lauds, that aims to be truly open, and discusses why another, more communitarian kind of society, particularly societies in Africa, may also reflect the quest for intellectual openness that is Popper's ideal. Moreover, this paper avers reasons why Popper should be comfortable with such a liberal-communitarian mix. The inter-subjectivity in his critical rationalism is a balance of an explicit individualism, and an implicit social element (Afisi, 2016a). Popper is indeed an author of such a balance. For a society to be truly open requires the careful recognition and protection of individual freedom. However, the extent to which individuals are free to perform actions that they desire without external constraints, and the level of their individuality in relation to others when performing such actions, remain a contentious issue between liberals and more communitarian thinkers. Popper's critical rationalism provides the necessary impetus to this contention through his view of freedom that I contend can best be viewed as carefully balanced, a view which combines individuality with a social element that upholds community values necessary for openness of society. With this combination, Popper's politics of liberalism provides an effective model of how a truly open society can be achieved. The values inherent to Popper's liberalism including those concerning intellectual openness, individual freedom, mutual respect, measured self-respect, welfarism, humanitarianism, accountability, critical debates and feedback from the citizens, together concern the conditions for a society to be truly open. There are many competing thoughts as to what openness might be in Popper's philosophy. The present study of Popper does not presume to address them all. The focus here is specifically on using Popper's idea of critical rationalism to balance relations between liberal politics of individual rights and freedom, and communitarian politics of the common good, as it relates to situations about how socio-economic and political conditions in Africa societies should be structured. While I contend that Popper's works in political philosophy focused centrally on Western political tradition, and not about Africa in its strict sense, significant lessons can be distilled from Popper that can offer suggestions on social reforms in Africa. This paper explores Popper's project of the open society across the plurality and differences of societies, so that his liberal ideas of individual freedom are not undermined, and the progress of the communitarian idea of the common good, that Africa societies are built upon, is also well enhanced. Liberal individualism and community values inherent to communitarianism are both well accommodated within Popper's critical rationalism.

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Nationalizing Communalism

The contemporary labelling of people who organize themselves in communal socio-economic and political settings as communitarians have its origins in Western classifications. Pre-colonial traditional African societies were believed to have been structured in indigenous communal background, instead of it in a communitarian context. This clarification is essential, as I will use the term communalism, as it relates to the structure of pre-colonial Africa, rather than its western connotation.

Some African scholars, such as John Mbiti (1970) and Ifeanyi Menkiti (1984) had contended that pre-colonial African society was basically communal, and that no mention can be made of an individual without making reference to the community, since the latter has supremacy over the former. In a bid to define and justify the supremacy of the community over individual rights, Mbiti noted that in African societies, the 'we' which means the community as a whole is a prerequisite for the 'I'. There cannot be 'I' unless understood in terms of 'we'. Consequently, the individual does and cannot exist independent of the community. Communal existence explains the totality of the Africans. Whatever happens to the whole group happens to the individual (Mbiti, 1970). It is within the same line of thought that Menkiti, in his assertion, said that no talk of human rights or personhood can be explained outside of the community which inhabits them. The individual is wholly communal (Menkiti, 1984). No will, memory or rationality defines an individual, only the community does (Menkiti, 1984).

Granted, there have been societies, not only pre-colonial African societies, even Western societies that have been communalistic at some point in the history of their developments. Evidence of this abound in the writings of Ferdinand Tönnies in his comparison of *Gemeinschaft* (oppressive but nurturing communities), and *Gesellschaft* (liberating but impersonal societies), and in others such as Robert Nisbet (*Twilight of Authority*), Robert N. Bellah (*Habits of the Heart*), Alan Ehrenhalt (*The Lost City: The Forgotten Virtues Of Community In America*), and in Robert Putnam's book, (*Bowling Alone*) with general discussions about the alienation in modern societies and the attendant consequences of atomized individuals who emphasizes on liberty without reverence to their social moorings, the concerns about the integrating role of social values and the relations between the individual and society. However, Western societies evolved out of emphasizing community values, due largely to the period of the enlightenment that accentuates new ideologies on individual rights and personal liberties. Consequently, Western societies became technologically advanced and their societies transformed into a more individualistic one.

The description of early Western societies as communitarian evidenced above and in some other classical socialist doctrine, such as, writings about the early commune and about workers' solidarity, traced back to early monasticism, is similar to what existed in pre-colonial traditional African societies, which were recorded to have been communalistic in social structure, economy and politics. The old Oyo Empire from the western part of Nigeria, for instance, had its empire covered thousands of kilometers with a well-organized and structured management system, lauding

its strength on the values of communal living and thriving, and displaying its admonition for callous individualism. Describing the Akan tribe of Ghana, Kwasi Wiredu's concept of consensual democracy presupposes that societies in Africa can be said to have experienced an all-inclusive system of governance in form of consensual democracy in pre-colonial times (Wiredu, 1995). The crux of consensual democracy is aimed at mitigating any problematic political upsurge through its conservative discussions and deliberations, and having its participants as representatives from every household and clans. Pre-colonial Africa was said to have had functional systems anchored on the basis of communalism, and channeled towards its advancement. Even with the manifestation of differences in traditions and cultures among African societies, communalism as a socio-economic and political system was its ideological basis.

With the advent of colonialism, the introduction of a capitalist economy, and the idea that one should allow only market forces to determine the prices of goods and services, the economy is controlled solely by private investors. This seems to portend that individuals can build and amass wealth without recourse to the welfare and concerns of one's employees. Karl Marx had criticized this kind of capitalist system that is based on class stratification between the proletariat and the bourgeoisie, which alienates labour, impoverishes workers, and establishes surplus value for the capitalists (Marx, 1977). This is the reality of most societies in our world today. Colonialism, and its attendant liberal-capitalism eroded the communalistic ways of traditional Africa, given way to a more individualistic or capitalist individualistic economy. In spite of the throbbing nature of capitalism and its capacity to dominate, communalism, as a way of life, held on strongly to its values. Africans were to ensure that the advantages inherent in the idea of the common good remained traditionally communalistic. This account for reasons that when agitations for independence or sovereign rule in most African countries began in the early 1960s, many of Africa's political thinkers at the time, who were also politicians in their own rights, began to advocate for a form of socialism that was inherently African in context and content.

African socialism became an ideology for decolonization, and particularly for the socio-economic and political emancipation from colonialism, due largely to two (2) major reasons. First, African political thinkers began to persistently demand for the adoption of socialism or better still, African socialism at the time, because of the successes witnessed in the prevailing economic growth in Soviet socialism. There was the successful Russian Revolution of 1917 which culminated in the Bolsheviks establishing a Soviet socialist state. This became heightened with the Soviets' successful launch of Sputnik 1 into orbit on October 4, 1957, the first of its kind, surpassing the United States of America in the race. This was followed up with the launch of the first man by name, Yuri Gagarin, into space in 1961. Subsequently, the Soviets sent the first woman, Valentina Tereshkova, into space in 1963, then they did the first spacewalk, performed by Alexei Leonov in 1965 (Petersen, 2019). The second reason was simply because of the presuppositions on the existence of the communal structure in pre-colonial Africa that bears a resemblance to socialism. Some elements of this way of life, persist till present days. Owing to these two factors, therefore, the resolution on an African form of socialism made the centrepiece of the Arusha Declaration, as

championed by Julius Nyerere of Tanzania in 1967. For Nyerere, the commitment to African socialism embellishes the principle of 'Ujamaa' (familyhood or brotherhood) as a social and economic development policy. Similarly, there was also the 'philosophical consciencism', as a model of African socialism advocated by Kwame Nkrumah of Ghana. Nkrumah argued that the conscience of the post-colonial African possesses three strands of influence: "traditional way of life; a second segment which is filled by the presence of the Islamic tradition in Africa; it has a final segment which represents the infiltration of the Christian tradition and culture of Western Europe into Africa, using colonialism and neocolonialism as its primary vehicles" (Nkrumah 1978). Other forms of prefixes on African socialism in Africa included, 'Democratic Socialism' by Obafemi Awolowo (Nigeria); 'Negritude' by Leopold Sedar Senghor (Senegal), 'Communaucratique' by Sekou Toure (Guinea), and quite a number of other ideologies, such as the ancient *Ubuntu* philosophy (South Africa) that is anchored on recognizing the humanity of a person through their interpersonal relationships; and also *Harambee* (Swahili, Kenya) meaning "Let us pull together". All these were efforts to ensure that the communalistic spirit was instilled, incongruence with the peculiarities of their immediate environments, into the new found socialism in Africa in a bid to annihilate tendencies of capitalism in post-colonial independent Africa.

The Concern about Popper's Liberalism in Africa

Most African societies of today have adopted capitalist individualism wholeheartedly, abrogating African socialism in its entirety. Post-colonial Africa continued to experience the domination of the Western styled economic model that was prevalent during the period of colonialism. Neocolonialism became the order of the day as there continued to exist the subtle propagation of socio-economic and political activities by former colonial rulers aimed at reinforcing capitalism, neo-liberal globalization, and cultural subjugation of their former colonies (Afisi, 2017). Yet, there continued to be agitations from socialist bystanders on the need to adopt a more humane socio-economic and political system that would address the gap between the 'haves and the have-nots' and the class stratification which appears to be associated with capitalism. Many arguments and resource materials have consistently addressed the negative impacts of liberal capitalism on the African economy; as it appears that African states, politically, favour the capitalist system without a backward glance, rather than considering what features and values that communalism may offer. Despite many of those positions against it, liberal capitalism overruns the politics and economics of most African states today. A look at the systems in Nigeria, Ghana and South Africa, for instance, shows that liberal capitalism persists. However, it appears that liberal capitalism has failed in Africa because corruption and underdevelopment are still pervasive there.

While it is an attractive venture to make a call to a total return to the African past, which has been said to be 'glorious', where communalism held sway, (in the hope that Africa would purge itself from the effects and shackles of neocolonialism), such a call would be futile because the prevailing circumstances in today's African societies is that the societies have become modern. Contemporary African societies have become modernised; people have become more mobile, and

the influences of liberal capitalism on the socio-economic and political system in Africa can no longer be repudiated. The tendencies that consistently call for a total eradication of capitalism in Africa, and clamour for a return to the socio-economic and political system of the pre-colonial era, seem to misconstrue the overarching principles that western liberalism have embedded on the continent. Rather than this battle on eradication, a realignment of these understandings would bring about a new set of interpretations involving learning from both traditions towards mutually harnessed benefits from the process of interaction. This is why Olufemi Taiwo, in *Africa Must Be Modern: A Manifesto*, berates the level of hostility that Africa is showing towards capitalism, stating the regrettable impact of such hostility to the economic, social, and political development of the continent. Africa must address the challenges of modernity and globalization by embracing them instead of being hostile to them. Africa needs to fully engage with and derive benefits from globalization and its attendant capitalist democracy (Taiwo, 2014).

One of the reasons that Popper's idea of liberalism is important for this interaction to succeed is that in Popper there are clear cut guidelines or features in his liberal ideology that makes it stand out from various other liberal ideologies. For what its worth, Popper's liberalism stands different from the libertarianism that Robert Nozick propagates. While individual freedom is sacrosanct in both Popper and Nozick, Popper's liberalism considers the idea of the common good. Even though liberalism in Popper is explicitly individualistic, there are inherent social elements in his political philosophy, such as in his idea of negative utilitarianism. Popper's idea of negative utilitarianism is the principle of ameliorating suffering and fighting the greatest and most urgent evils of society, and includes but not limited to ameliorating "starvation, pain, humiliation, injustice, exploitation". Negative utilitarianism would be a public policy which aims to alleviate suffering for the greatest number of people than promoting happiness. Consequently, this idea of negative utilitarianism exhibits both elements of the individual and the social, as espoused in Popper. With negative utilitarianism, Popper's welfarism is established which is to be implemented through state's limited interventionism. The aim is for the state to take care of the wellbeing of the individual and the social public. Popper's welfarism aims at ameliorating extreme inequality, which is what the social engineer should address. It is upon these ideas that Popper's concept of social liberalism is built, or what I call Popper's enduring liberal-communitarianism (Afisi, 2016b). While Jeremy Bentham and John Stuart Mill's idea of utilitarianism deal with producing the greatest amount of good for the greatest number of people, Popper's negative utilitarianism requires us to promote the least amount of evil or harm, or to prevent the greatest amount of suffering for the greatest number. Popper's idea is that governments should respond piecemeal to recognized social ills – to whatever is widely acknowledged to be harmful to the people. This can take the form of economic intervention, state protectionism and the creation of legal frameworks. This also transcends to Popper's idea of piecemeal social engineering where government should reform society in a piecemeal approach or in bits and pieces approach, rather than a holistic approach that characterizes a large-scale planning intervention. With the piecemeal approach to social reform, one can look at the education sector, for instance, in order to identify the inherent problems, and propose a tentative

solution on how to resolve the issues in bits and pieces. The reason for this approach is simple. Attacking a problem within a sector holistically just in an effort to radically resolving the issues without applying due diligence in reforming it, could lead to unintended consequences that would come along the way. However, this can be mitigated and dealt with accordingly as one takes them in a piecemeal approach.

There is a systematic connection in Popper's liberal ideas about how the piecemeal social engineering approach works in relation to the idea of negative utilitarianism, individual freedom, and also to the idea of limited state interventionism. For Popper, democratic social reconstruction must be piecemeal in order to preserve individual freedom and to ameliorate human suffering. One can ameliorate a perceived problem in order to ensure that they reduce suffering' piecemeal. Consequently, government can only intervene in issues in the society when there are recognized social-ills. This intervention can happen when, for instance, there is a need for control, for punishment and for ways by which suffering can be reduced on as many people as possible. An intervention of a social welfare system that ensures that people who cannot afford necessary basic needs such as food and accommodation, particularly when they do not earn enough to cover these basic necessities for survival can receive some assistance from the government. These are some of the basic features of Popper's liberal ideas and they are in consonance with the idea of the common good. One can then see that there is a social element to Popper's liberal ideas in spite of the sacrosanct nature of the concept of freedom in his political philosophy. Social in the sense that it considers, for instance, how to ensure that people do not suffer. How to ensure that government policies tackle social reform in the way that it is piecemeal, and avoid holistic approaches with tendencies of having ever-lasting damaging effects. These attributes are social, and it is the reason that I believe that rather than just adopting liberalism on the whole, we can find ways to synthesize Popper's liberal ideas with the positive elements in the communalistic background that societies in Africa are supposedly built. In other words, because there is inherent implicit social element to Popper's idea, in spite of its explicit individualism, it makes it easier, different from all other liberal ideas, to be able to apply it to the basic constituents of communalism. This is the crux of what I have termed liberal-communitarianism, in its sophisticated form. This is 'a new way of thinking' about social democratic reforms for Africa.

Liberal-Communitarianism: A New Way of Thinking for Africa

To achieve this new way of thinking about social reform for Africa is simple. Unfortunately, politics and economy in Africa have not been mostly ideological. Governments often merely apply whatever economic and political indices they feel would work, at particular times, without establishing ideological bases for them. It is not even clear, in most African states, if the economy is purely market driven or whether it is public sector price controlled. Even politics in Africa are not ideological, compared to what is obtainable in Western societies where politics and economy are either ideologically right-wing, left-wing, conservatives, democrats, and republicans. Most African states arbitrarily assign policies on situational basis, rather than on ideological basis. Party

politics is the worse-off, as promises during electioneering campaign are often never fulfilled. The reason for most promises unfulfilled is because they are not ideological. While there are visible socio-economic and political challenges in Western democratic societies themselves, the strict ideological foundations in their polity seems to account for reasons that these societies are growing both politically and economically when compared theoretically to Africa.

With the vast number of arable lands in Africa, the continent has immense potential for feeding itself. However, the agricultural sector does not seem to be growing enough. One is perturbed that many countries in Africa are still dependent on imported grains. Take the Nigerian economy for instance, with a population of over 220million people, the country largely eats food it does not grow, largely wears cloths it does not sew, largely use products it does not produce, largely drives cars it does not manufacture. By this absolute dependence on other countries for imported goods, the country is helping to grow the economies of others at the expense of its own growth. The United States Federal Reserve hike of its benchmark interest rate by three-quarters of a percentage point in mid-2022, for instance, means a sprawling reduction in the currency values of many emerging markets economies against a stronger dollar. This is what happens to a society whose socio-economic and political models are solely reliant on foreign parameters.

I think that with Popper, we can establish an ideological structure or ideological basis for Africa so that they do not just apply policies haphazardly to their politics, to their economies, even to social reforms. Once there is an agreement that Popper's liberal ideas are fitting, going by the various features of his political philosophy as earlier enumerated, it can apply suitably, say for instance, to the idea of food sufficiency. One can then begin to conduct adequate research into how to provide food sufficiency for the society. They can be done piecemeal. It is not enough to just say because people are hungry, the government decided on an importation of food, rather than trying to see how to grow the food that its people can consume, and how to reform the society in a manner that would be sustainable both for the economy and the politics. Popper recommended a liberal society where reform would be dealt with piecemeal with a view to the social 'engineer' learning from this person's own mistakes.

Granted that Popper's political philosophy is itself a western ideology; but lessons can still be distilled in ways that would embrace positive elements in African communal experience. Popper can be applied to suit cultural, economic and political situations in Africa. In applying Popper's piecemeal social engineering method, I contend that the piecemeal social engineering approach would work well in a society that is already highly technologically advanced (Afisi, 2021). However, in a society, such as societies in Africa, that require radical reforms, in order to be able to measure up to the level by which one can be safe to assume that people have attained a high standard of living, there is a need to modify the piecemeal engineering approach to suit Africa's situation. This modification is what I have called 'many-pieces-at-once-social engineering' (Afisi, 2021). For instance, it is not enough to say there are problems in the educational sector, health sector and road infrastructure, and one begins to take such problems and tackle them one after the one, which would have been the most ideal. However, Governments do not just sit down and

undertake only one reform or adjustment at a time. Governments are made up of different departments and ministries — all of which undertake all kinds of reforms. Some may undertake bank reforms, others education reforms, legal reforms, sports reforms, health reforms. All of which can go on simultaneously insofar as they are undertaken by different departments of government. This approach is many-pieces-at-once. The piecemeal approach considered from the point of view of each department is one-piece or two-piece reform and from the point of view of society, it is many-pieces-at-once reform. Popper's phrase "piecemeal" can be used as a placeholder in the sense of a fragmented approach that is for any kinds of reforms that are adjustments in every facet of society — adjustments that change the society's "content/substance" rather than adjustments that are intended to change its "structure /foundation". In a many-piece-at-once approach we can have one-piece, two-piece, three-piece, many pieces and lots of pieces (Afisi, 2021). The goal would be that for many-pieces-at-once social engineering, the objective is to achieve a radical change rather than just applying piecemeal engineering approach that may be snail-paced. The piecemeal engineering approach may not bring about the needed change as speedily as it is required. In spite of its radical nature, one can still monitor the extent of reforms even when it is done 'many-pieces-at-once' over a long period. Where there are mistakes along the way one is able to retrace and correct such mistakes. No matter how rapid the reforms undertaken by 'many-pieces-at-once' social engineering the effects are better mitigated than the unintended consequences that large-scale reforms would bring about. It would be possible to monitor, applying Popper's conjecture and refutation approach by picking the right variables to change 'many-pieces-at-once' in order to promote social ends.

Popper and Liberal-Communitarianism

On the question of whether liberal individualism that is explicit in Popper's political philosophy can accommodate the communal values indigenous to African socio-political system in a non-contradictory way, I will argue in the affirmative. This forms the structure of a liberal-communitarian philosophy that promotes both self-determination by individuals and community enhancement of individual well-being. There are prospects for such a liberal-communitarian philosophy with aims and objectives that enhance Karl Popper's project of the open society. As I have argued, while Popper's politics of liberalism are overtly individualistic, they also are implicitly communitarian. Popper's ideas offer a basis for rational engagement with non-liberal ideologies that emphasize social and community togetherness. There are underlying ethical and epistemological principles associated with this idea in the sense that brings out an implicit social element as it interrelates with the explicit strand of individualism in Popper's critical rationalism. These principles can be used to further explain that Popper's idea of freedom is different from the general idea of freedom that most liberals defend. With Popper, there is a social dimension to individual freedom in such a way that the individual performs actions without external constraints yet such freedom is exercised with respect to the freedom of others within the social environment. Some commonly held views about Popper's critical rationalism, particularly his liberal political

philosophy, emphasize that Popper's philosophy is founded only on the principle of individualism. This counteracts the position of the enduring social element that I argue for in this paper. The concept of "social freedom" (Afisi, 2014) is an attempt to unite two ideas that are in seeming tension with one another, the one Popper's explicit emphasis upon individual liberty, and the other Popper's often implicit invoking of social interaction, for example from his emphasizing intersubjective criticism. With the above description, it is apparent that Popper used both concepts of methodological individualism and ethical individualism only as a theoretical basis for his criticisms of holism or methodological collectivism. Popper merely did this in order to reveal the potential dangers in theorizing a collectivist ideology that renders individual rights and freedom susceptible to being subjugated to totalitarian rule. Popper was not averse to a communitarian ideology that upholds not only individual freedom but also community values. It is on this basis that I maintain that as methodological individualism addresses the nature of research in the social sciences in relation to human individual choices and actions, and ethical individualism responds to the ethical obligation of liberal politics to attach importance to the individual, they both have implications for the concept of freedom in Popper's liberal politics. However, they do not suffice in capturing the total configuration of Popper's philosophy as the call for openness and intersubjective criticism in Popper is of a social kind. The point here is that Popper's understanding of openness of the quality of a society is not merely of an individual envisioning a life of pure egoism. The openness of society embodies individuals who are socially embedded with others in the society, whose goals, aspirations and self-determination are socially interdependent upon one another. This is why for Popper critical rationalism is intersubjective and mutual, and to that extent social. In the light of these points, although Popper may have explicitly endorsed individualism (both methodological and ethical) his actual position on individualism is balanced with a social element. Without the implicit social element, Popper's critical rationalism becomes less comprehensible. The point to remark here is that Popper's critical rationalism expresses the capacity for individual self-determination or the ability of an individual to perform an action without being impinged upon by another. This is the individualistic aspect. However, the features of inter-subjectivity and critical feedback from others ultimately constitute a social element. One can then categorically say that openness of society in Popper's critical rationalism has a balanced individual and social element. Even with this communitarian element in Popper, one thing is clear: Popper expressed aversion for any collectivist or socialist ideology that erodes the freedom of the individual for the sake of the group or the collective. Although Popper may have acknowledged the sense of equality that collectivist or socialist ideology aims to achieve, he was critical of the utopian dream of an egalitarian society that usually characterizes socialism.

The magical or tribal or collectivist society [can] also be called the closed society, and the society in which individuals are confronted with personal decisions, the open society ... A closed society resembles a herd or a tribe in being a semi-organic unit whose members are held together by semibiological ties – kinship, living together, sharing common efforts, common dangers, common joy and common distress. It is still a concrete group of concrete individuals, related to one

another not merely by such abstract social relationships as division of labour and exchange of commodities, but by concrete physical relationships such as touch, smell, and sight. (Popper, 1945, Chapter 10)

In spite of my position about contextualising Popper's liberal ideas to correct wrongs in political situations in Africa, I disagree with the above epigram more or less completely. This is a grossly false anthropological generalisation for Popper to assume that all tribal societies are necessary closed ones and intellectually stagnated. Popper advanced the historical claim that rational methods within society had taken humans beyond tribalism. Yet anthropologically the purview of Popper's thinking was rather narrow. It chiefly concerned the "West". It concerned Europe chiefly, that was in Popper's time riven by totalitarianism and political disasters. For the occurrences in Europe at the time, Popper rejected collectivist societies, and labelled them as not intellectually opened. He termed them, "closed tribal societies". Popper considered the "Greek society alone as one with the values essential for an open society" (Metz, 2021). In my view, traditional African societies were both collectivists and communalistic in nature, yet they were not necessarily totalitarian, anti-egalitarian and stagnated. Traditional African societies had a strong sense of community belongingness where individual right, liberty or freedom was guaranteed alongside the common good of the community (Afisi, 2021). We can learn from Kwame Gyekye's idea of moderate communitarianism which maintain the position that although African society was communal, individual freedom was never in jeopardy. Aside from the social nature of human beings, Africans also possess other things which define them such as rationality, the right sense of making moral judgement and virtue capabilities (Gyekye, 1997). This view is also similar to that of Thaddeus Metz's Afro-Communal Ethic which emphasizes on the people's capacity to relate communally rather than rationally. Indigenous African tradition is anchored on the human capacity to be relational, and specifically communal and not so much their capacity for rationality (Metz, 2021), as Popper believed was a basic feature of an open society. As an African myself who, as is the case with so many people in Africa, stands as a member of a tribe, with the strong sense of community that is entailed by such membership, I know from personal experience that Popper's gross anthropological generalisation is wrong. Yet my purpose in this paper is to mobilize Popper's own overall philosophy with only modest corrections. I endeavour to grow Popper's philosophy beyond its concentration upon Europe, and to develop it in ways that involve some corrections of this error, and in light of that correction, to develop from insights of Popper's own a political philosophy that I have proudly termed liberal-communitarianism.

For liberal-communitarianism in Popper, there is no need for a contradiction. There is a social element in critical rationalism, and it is the social attribute that Bryan Magee (1973) considers as a social democratic philosophy in Popper. The social element in Popper epitomizes the idea of intersubjectivity, as it trades in the communitarian or intersubjective requirements for critical reflection. The idea of critical feedback from others is social.

Conclusion

Understanding liberal-communitarianism from the Popperian perspective is not inclined to altering the value of the common good that communalism exemplifies. Rather, it will enhance the typical African contemporary outlook to doing things; instead of ruminating about a past in pre-colonial times that is no longer attainable. The Africans today, like what Kwame Nkrumah said, has been influenced by the triple heritage. The Afro-Islamic tradition, the Euro-Christian tradition as well as the African tradition itself. A true African personality of today is a hybrid of cultures. This is the reason that communalism can no longer adequately take care of socio-economic and political complexities of modern society, while at the same time, liberalism cannot sufficiently address the question of the value of common good that African societies are characterized. This accounts for this new thinking on a liberal-communitarian philosophy. I do not think that liberal-communitarianism, as with other theories, is final. However, the objective is to endorse Popper's critical rationalism and thus to show the continued relevance of his ideas in contemporary political philosophy, quite in order to develop a liberal-communitarian political philosophy that I am proud to call my own. This liberal-communitarian philosophy that emerges offers the clearest and most careful grounding, I contend, for the idea in general of social unity. The goal, therefore, is to ensure an appropriate application of Popper's philosophy to Africa for proper democratic social reconstruction.

References

- Afisi, O. T. (2014). On Karl Popper's Liberal Principle of Freedom: The Individual and Social Aspects. *GSTF International Journal of General Philosophy*. 1(1), 27-33.
- Afisi, O. T. (2016a). Popper, Liberal-Communitarianism, Beyond the Politics of Liberalism. *Philosophia: E-Journal of Philosophy and Culture*. Vol. 11, 67- 86
- Afisi, O. T. (2016b). Towards Exploring an Enduring Liberal-Communitarianism in Karl Popper through His Intellectual Biography. *Journal of Philosophy, Culture and Religion*. Vol. 24, 13-22.
- Afisi, O. T. (2017). "Neo-colonialism" in Internet Encyclopaedia of Philosophy: A Peer-Reviewed Academic Resource. www.iep.utm.edu
- Afisi, O. T. (2021). Karl Popper, Tribalism and the Question of Africa's Development. In: Afisi, O.T. (eds) *Karl Popper and Africa: Knowledge, Politics and Development*. Springer. https://doi.org/10.1007/978-3-030-74214-0_16
- Afisi, O. T. (2021). Karl Popper's Social Engineering: Piecemeal or 'Many-Pieces-at-Once'? In: Afisi, O.T. (eds) *Karl Popper and Africa: Knowledge, Politics and Development*. Springer. https://doi.org/10.1007/978-3-030-74214-0_3
- Gyekye, K. (1997). *Tradition and Modernity Philosophical Reflections on the Africa Experience*. Oxford University Press.
- Magee, B. (1973). *Karl Popper*. The Viking Press.
- Marx, K. (1977). *Capital: The Process of Capitalist Production*. Trans. Fowkes. Knopf Doubleday.
- Mbiti, J. (1970). *African Religions and Philosophy*. Doubleday.
- Menkiti, I. (1984). Person and Community in African Traditional Thought. In: Wright R.A. (ed.), *African Philosophy: An Introduction*, 3rd ed. Lanham University Press of America.
- Metz, T. (2021). Popper's Politics in the Light of African Values. In: Afisi, O. T. (eds) *Karl Popper and Africa: Knowledge, Politics and Development*. Springer. https://doi.org/10.1007/978-3-030-74214-0_2

-
- Nkrumah, K. (1978). *Consciencism - Philosophy & Ideology for Decolonization*. Panaf Press.
- Petersen, C. C. (2019). A Short History of Roscosmos and the Soviet Space Program. [A Short History of the Soviet and Russian Space Program \(thoughtco.com\)](https://thoughtco.com/a-short-history-of-the-soviet-and-russian-space-program/)
- Popper, K. (1945). *The Open Society and Its Enemies: The Spell of Plato*. Routledge and Kegan Paul.
- Taiwo, O. (2014). *Africa Must Be Modern: A Manifesto*. Indiana University Press.
- Wiredu, K. (1995). Democracy and Consensus in African Traditional Politics: A Plea for A Non-Party Polity, *The Centennial Review*, 39(1), 53-64, <http://www.jstor.org/stable/23739547>.



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Popper in Greece

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Notwithstanding Karl Popper's deep admiration for ancient Greece and his affection for modern Greece, his work has been mostly viewed with caution by Greek scholars who, until relatively recently, often chose to either ignore or downplay it. This stance can be partially attributed to the novel approach of Popper's critique to Plato which did not fare well with the foundational biases of modern Greek academic tradition and the prevailing intellectual inclinations of Greek scholars in the fields of the methodology of science and political theory. Although this bias has begun to recede during the last decades, there remains a lot to be done to fully integrate Popper's work into the Greek intellectual and social discourse. Nevertheless, the establishment of the Department of History and Philosophy of Science at Athens University, along with the efforts of academics and public intellectuals, particularly during the Greek financial crisis of the last decade, have played a pivotal role in generating a broader interest in critical rationalism and popularizing Popper's ideas among a wider audience. This paper examines the evolution of the reception of Popper's ideas in Greece, both in scholarly circles and in public life, from the time of publication of his seminal work "The Open Society and its Enemies" until today, highlighting the efforts to foster a more comprehensive understanding of his important contributions.

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1. Introduction

Karl Popper read and wrote extensively on ancient Greek philosophy. Even though he was not a classicist, he read Plato and the Pre-Socratic philosophers in the original Greek, and he used the original text for the footnotes in his work. In his Presidential Address at the October 1958 meeting of the Aristotelian Society, he describes himself both as “an amateur, [...] a lover of the beautiful story of the Pre-Socratics”, and “not a specialist, nor an expert” on the subtleties of textual criticism of ancient Greeks. It was this approach that looked for the argument beyond the hermeneutics that invited criticism from scholars such as Kirk (1960; 1961) and Raven (Lloyd, 1967).

Popper famously saw in the Pre-Socratic the dawn of the modern scientific method as, according to his view, their method went contrary to the Baconian thesis, the “myth according to which science starts from observation and then slowly and cautiously proceeds to theories” (1958-9, p. 3). The Pre-Socratic were according to Popper the first thinkers to propose bold conjectures to the problems they perceived, and Popper saw this boldness as a moral imperative addressed to the intellectual, as he writes at the end of *The Logic of Scientific Discovery*: “Bold ideas, unjustified anticipations, and speculative thought, are our only means for interpreting nature: our only organon, our only instrument, for grasping her” (1953 [1934], p. 280). His intellectual affinity towards the Pre-Socratic lasted for his whole life as shown by one of his last works which was dedicated to Parmenides (1998), one of “the early Greek philosophers who gave Europe its philosophy, its science and its humanism” (p. viii).

Furthermore, Popper considered Socrates a personal intellectual hero, as the pioneer of critical thinking. Popper’s famous dictum on the rationalist attitude “I may be wrong, and you may be right, and by an effort we may get nearer to the truth” (Popper, 1945b, p. 225) rings decidedly Socratic. Popper even thought that the Three Worlds distinction that he proposes in *Objective Knowledge* (1972) is heavily influenced by Plato, even though Popper’s and Plato’s metaphysical frameworks and accordingly their conceptions of the world of ideas differ vastly. Besides, Popper repeatedly expressed his admiration for Plato and acknowledged his philosophical stature notwithstanding his critical stance, (see Popper, 1963, p. 89; 1972, p. 122) quoting approvingly Alfred Whitehead’s famous aphorism that all philosophy is footnotes to Plato and declaring Plato a forerunner of Newton and Einstein (Popper, 1963, p. 66-67).

However, Popper was famously critical of Plato’s historicist and teleological political philosophy, especially as expressed in the *Republic* and *Laws* where he saw Plato as a precursor to modern totalitarianism and an archetypical enemy of liberal democracy and the open society (Popper, 1945). In Popper’s view Plato’s fear of the opening of the Athenian democracy led him “to defend lying, political miracles, tabooistic superstition, the suppression of truth, and ultimately, brutal violence” (Popper, 1945, p. 189), and to propose a constitutional arrangement that runs contrary to the humanitarian and democratic values espoused by his mentor, Socrates.

This critical, and at times even polemical, stance against Plato initially alienated Popper from mainstream Greek scholars, who probably saw his critique not only as unorthodox and not

sufficiently backed by textual and contextual data but also as an attack on the ideological foundations of modern Greek academic tradition which since the founding of the modern Greek state had been heavily connected to German and more widely continental philosophic currents. Even though this bias has been largely mitigated during the last decades, Popper's work is still in some extent faced with caution or even enmity by many modern Greek scholars, both in its epistemological and its social and political aspects.

Although the impact of Popper's philosophical and epistemological work should be distinguished from the impact of his social and political ideas in Greece, a common thread can be found nonetheless.¹ Even though the relative absence of discussion of popperian philosophical and epistemological ideas by many Greek philosophers and historians of science can be partly attributed to the influence exerted to them by the work of Kunh, Lakatos and Feyerabend, this preference can arguably be ascribed to a more general academic tradition that favors more sociological and historical approaches over Popper's critical rationalism.

2. Modern Greek Philosophical Tradition and Popper

The first wave of the belated interaction with Popper's work in Greece was mostly centered on his critique of Plato in the first volume of *Open Society and its Enemies* (1945). Not surprisingly, his view that Plato could be considered a forerunner of totalitarianism did not fare very well with most Greek scholars who mostly ignored or glossed over Popper's work [eg. Vlastos (1973), Tsatsos (2005)] even though some aspects of the Popperian critique have similarities on their work. Characteristically, Despotopoulos (1978; 1988) in arguably the most detailed critique to Popper's view by a Greek scholar talks about the "false impression that can easily be made by some wording of the text of the *Republic* to some readers not acquainted with the book's language, style and intention", going so far as to argue that Plato, properly read, should be viewed as opposed to historicism.

The great differences among these three aforementioned thinkers underscore the scope of Popper's lack of impact on that generation of Greek scholars. Vlastos, a Greek academic philosopher working in American universities was a prominent scholar of Plato and the ancient Greek philosophy. Tsatsos, a Platonist and Neokantian, was a professor of Philosophy of Law in the Athens University and the co-founder and editor of the journal *Archive of Philosophy and Theory of Science* in the 1930's before embarking in politics. Underscoring his influence in the Greek public sphere was his election as the President of the Academy of Athens in 1966 and as the first President of the Hellenic Republic after the restoration of the democracy in 1975. Despotopoulos, a professor of Philosophy of Law and member of the Academy of Athens as well as a left-wing public figure who served as Minister of Education wrote extensively on philosophy, history and politics.

¹ For the unity of the popperian argument both in the theoretical/philosophical and the social/political sphere, see eg. Dimitrakos (1981, 1999, 2014, 2019).

The absence both of a more analytical treatment of Popper's philosophical and epistemological work by academic philosophers, and of a positive review of his argument in *Open Society and its Enemies* among Greek scholars that examine topics covered in Popper's work can be interpreted as the result not just of a lack of availability or interest, but chiefly of a deep difference of approach towards philosophical and epistemological questions between Popper and the then prevalent Greek academic tradition.

3. Academia

A significant step towards the incorporation of Popper's epistemological and social thought into the Greek academia was the founding in 1993 of the Department of Methodology of History and Theory of Science (later renamed to Department of History and Philosophy of Science) in the University of Athens. The Department was initially staffed among others by professors Petros Gemtos whose handbook on the *Methodology of Social Science* (1987, 2004, 2016) was seminal in introducing Popper's epistemological thought to Greek students, and Dimitris Dimitrakos, arguably the most prominent Popperian in Greece, who studied under Popper (see Dimitrakos, 1981; 1991; 1999; 2019). From the department's current staff, Professors Chrysostomos Mantzavinos, Vasso Kindi and Stathis Psillos (2001) discuss in their work Popperian themes albeit from a wider theoretical perspective.

Nevertheless, many representatives of the first generation of Greek academics working on History and the Philosophy of Science (such as Aristides Baltas, Costas Gavroglu and Pantelis Nikolakopoulos) centered on the Athens University Department of Methodology of History and Theory of Science and the National Technical University of Athens were mostly influenced by the work of Kuhn, Lakatos and Feyerabend. It is worth noting that both Baltas and Gavroglu served as Ministers of Education under the 2015-2019 left-wing SYRIZA led government.

Popper's epistemological ideas are discussed in all major handbooks by Greek academics such as Kalfas (1983), Metaxopoulos (1988), Kouzelis and Psychopedis (1994), Kouzelis (1997), Pappas (2002), Drakopoulos et al. (2015) etc., although mostly in relation to the later work of Kuhn and Lakatos, as most of those scholars are not directly influenced by Popper.

On the same vein, the academic journal *Epistimi kai Koinonia* (Science and Society) was founded in 1993 with a stated mission to advance scientific research and the study of subjects related to political, social, and moral theory. Under the influence of Dimitrakos, the journal had initially a more Popperian orientation but still occasionally publishes related articles.

Popper's social and political work (eg. 1945, 1957 [1944]) has been taught as an integral part of Political Philosophy courses syllabi, notably by Pericles Vallianos, professor emeritus at the Department of Political Science and Public Administration, University of Athens.

It is notable however that only one original monograph on Popper has been published in Greece by Spyros Makris (2013), associate Professor of Political Theory at the Department of International and European Studies, University of Macedonia, while only three doctoral theses on Popper can be

found in the Greek National Archive of PhD Theses¹ written in Greece since 1993 (Karachalios, 1993; Kosteas, 2021, Patelis, 2022).

A list of Karl Popper's books translated and published in Greek can be found at the end of this paper. It is worth noting though at this point that neither *The Logic of Scientific Discovery* (1959 [1934]), nor *Conjectures and Refutations* (1963) have been published in Greek, the preference being towards Popper's works on social and political topics, while the first book by Popper in Greek, a translation of the first volume of *Open Society and its Enemies*, was published only in 1980. Also, a significant number of the works presented in the list are currently out of print or barely available.

4. Civil society organizations

The task of popularizing Popperian ideas in Greece has been undertaken in a great part by a number of civil society organizations inspired by his work.

The Citizen's Movement for an Open Society (Κίνηση Πολιτών για μια Ανοιχτή Κοινωνία - CMOS)² was established in 1989 by prominent individuals coming from different professional backgrounds, ideological orientations, and political allegiances, resting on the principle of inter-ideological approach. Even though the Movement is not overtly Popperian, it promotes active debate on important issues through an open and critical dialogue. CMOS is mostly active in civil society, the environment, democratic governance and public administration, justice and human rights, higher education, and European and international relations. Its current (October 2022) president is Panos Carvounis, former Head of the Permanent Representation of the European Commission in Greece.

The Open Society Club (Όμιλος Ανοιχτή Κοινωνία - OSC) was founded on July 2012 by academics and active citizens that subscribed to the principles of liberal democracy, liberalism, the rule of law, human rights, and civil society. Its founding coincided the Greek financial and political crisis of 2009-2019 which precipitated a wave of disenchantment among Greeks who then voted massively for anti-liberals at both sides of the political spectrum and even voted the neo-Nazi *Golden Dawn* into the Greek Parliament. The Club's founding declaration was drafted by Dimitris Dimitrakos³. OSC was most active during the crisis years, organizing a series of lectures about open society⁴ as well as on various classical liberal and Hayekian themes, and was responsible for the *Ratio Vincit* blog that hosted opinion articles and pieces that popularized classical liberal ideas mostly by Dimitris Dimitrakos (eg. 2011, 2014) and Georgios Archontas (eg. 2013).

¹ <https://www.didaktorika.gr/>

² <http://www.kinisipoliton.gr/en>

³ The text of the founding declaration (in Greek) can be accessed at <https://anoiktikoinonia.wordpress.com/2012/07/12/διακήρυξη-ομίλου-ανοιχτή-κοινωνία/>

⁴ Eg. The open lecture on *The liberalism of Karl Popper* by Georgios Archontas organized by OSC and the Institute of Diplomacy and Global Affairs on the 23th of October 2014.

The Open Society Club was unofficially incorporated into The Center for Liberal Studies (KEFiM)¹ since two of its most active members, Dimitrakos and Archontas, joined KEFiM's academic board in 2017. KEFiM is currently the main independent non-partisan non-profit liberal think tank in Greece. Its "wide tent" policy allows the popularization of Karl Popper's as well as Friedrich Hayek's political, social, and epistemological ideas to a broad audience via various outlets which span from open lectures and articles to memes. The philosophical and political arguments of Karl Popper inform heavily KEFiM's main educational program on the current challenges of liberal democracy that began in 2022 and will continue for the coming years.

5. Politics

Although Popper's political and social ideas have not been explicitly incorporated into the ideological declarations and policy agendas of the mainstream Greek political parties, some of them, such as the importance of an open society which endorses the free critical discussion of ideas, the preference of piecemeal engineering over more comprehensive, grandiose social planning, and the dangers of the historicist and teleological view of society, are sometimes found in political discourse, mostly coming from the main center-right (Nea Dimokratia) and center-left (PASOK – Kinima Allagis) parties, even though they are rarely properly attributed.

During the 2009-2019 Greek financial crisis, Popperian ideas were often expressed in the public sphere in contrast to trends perceived as populist and totalitarian. However, there was a strong negative bias against any reference to open society, which was often seen even by prominent scholars, politicians, and top state officials as a "neo-liberal" attack to tradition, national coherence, and a perceived historical, normative, and institutional exceptionality of Greece. This mostly anti-liberal bias has been losing some of its momentum especially since 2015 but can be still seen in the public sphere, most notably among columnists in mainstream newspapers, even in newspapers of record. A notable columnist who since the 1990's often examines favorably Popperian themes is Paschos Mandravelis, who writes for *Kathimerini*.

A characteristic token of the widespread caution, if not hostility of many Greeks towards Popperian ideas in the past is illustrated by the following anecdote related by Dimitris Dimitrakos (2011): In September 1992, Dimitrakos visited Karl Popper in England and extended him an invitation on behalf of the University of Athens and the European Cultural Center of Delphi to be honored with an honorary doctorate. Popper was enthusiastic about the prospect because of his great admiration for ancient Greece and his love for modern Greece. He even postponed his programmed visit to Prague, where he was invited for the same purpose, to make time for Athens as he considered the limitations of his old age.

Popper was presented with his University of Athens honorary doctorate on May 17th, 1993. The university ceremonial hall was half-empty with only 50 to 60 attendants and not a single member of the Greek political class, despite various assurances to the contrary.

¹ www.kefim.org

The visit of Karl Popper to Greece was however covered by the Greek national television broadcaster that produced a program in which several Greek public intellectuals spoke about Popper and his philosophy giving the wider Greek audience a chance to get acquainted with his ideas and work.

Next year, Popper visited Prague. He was received there with great honors by the then President of the Czech Republic, Václav Havel who insisted on taking a commemorative photograph with him.

6. Conclusion

Although Popper's work had been received with caution by Greek scholars for decades, his ideas are gaining ground slowly but steadily in Greece. Liberalism, which used to be a dirty word in Greece, is currently, in the aftermath of the financial crisis of the previous decade, the most popular ideological self-characterization in the country (Dianeosis, 2018; 2019; 2022)¹. Traditional "ethnocentric" Greek intellectuals that felt they were part of a "Popper vs. Plato" battle that supposedly touched upon the ideological foundations of modern Greece, are giving way to a younger generation of scholars that understand Popper's criticism in its proper context. In the field of philosophy of science and epistemology, the Popperian argument and critical rationalism more generally are being taught and examined favorably and not just in the context of the later work by scholars such as Kuhn and Lakatos.

In this regard, a promising relevant noteworthy development was the publication of five articles on Popper's life and work in *Philosophia*, the journal of the Academy of Athens, in 2019 (Alatzoglou-Themeli, 2019; Dimitrakos, 2019; Goutsia, 2019; Kinti, 2019; Virvidakis, 2019), along with the publication of the Greek translation of Popper's autobiography (Popper, [1974], 2018).

Lastly, Popper's social and political ideas are being presented and rightly attributed by a growing number of Greek scholars, journalists, public figures and civil society organizations to an audience willing to examine them more sympathetically freed from the heavy anti-liberal bias that was prevalent in the past decades.

What remains to be seen, and the challenge for Greek Popperians and classical liberals, is whether the disillusionment of Greeks with anti-liberalism, Marxism and other closed ideological systems that has been expressed in the last years, most notably with the 2019 general election results, will prove to have a more permanent character, assisted by Popper's still relevant criticism.

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¹ See the rolling *Ti pistevoun oi Ellines* (What Do Greeks Think) survey by the independent think-tank DiaNEOsis. In the last 2022 installment, the "liberal" self-characterization was again the most popular one with 18,9% of the answers against 14,1% of the next most popular "social democrat" self-characterization.

Works of Popper

Karl Popper's books published in Greek: (in order of their Greek publication date).

- Popper, K. R. (1945). *The Open Society and its enemies*. Routledge and Kegan Paul.
- Popper, K. R. (1980). *I anoichti koinonia kai oi echtroi tis: I goiteia tou Platona*. (Vol. 1). Translated by E. Papadaki. Dodoni.
- Popper, K. R. (1982). *I anoichti koinonia kai oi echtroi tis: Hegel, Marx kai ta epakoloutha* (Vol. 2). Translated by E. Papadaki. Dodoni.
- Popper, K. R. (2003). *I anoichti koinonia kai oi echtroi tis: I goiteia tou Platona* (Vol. 1). Translated by E. Papadaki. Papazisis.
- Popper, K. R. (2003). *I anoichti koinonia kai oi echtroi tis: Hegel, Marx kai ta epakoloutha* (Vol. 2). Translated by E. Papadaki. Papazisis.
- Popper, K. R. (2021). *I anoichti koinonia kai oi echtroi tis* (Vol. 1 & 2). Translated by E. Papadaki. Papazisis.
- Popper, K. R. (1940). What is dialectic? *Mind*, 196, 403-426. / Popper, K. R. (1968) Epistemology without a Knowing Subject. In Van Rootselaar, B. & Staal, J. F. (Eds.) *Studies in Logic and the Foundations of Mathematics* (pp. 333-373). Elsevier, as Popper, K. R. (1990). *Ti einai i dialektiki? Gnosiotheoria choris gnostiko antikeimeno*. Translated by S. Dimopoulos. Vantias.
- Popper, K. R., Condry J. & Baudouin, J. (1995). *La télévision: Un danger pour la démocratie*. Anatolia. As Popper, K. R. (1995). *Tileorasi: Kindynos gia ti dimokratia*. Translated by A. Philippatos. Livanis.
- Popper, K. R. (1998). *The World of Parmenides: Essays on the Pre-Socratic Enlightenment*. Routledge, as Popper, K. R. (2002). *O kosmos tou Parmenidi: Dokimia gia ton prosokratiko diaphotismo*. Translated by K. Petropoulos. Kardamitsa.
- Popper, K. R. (2002). *Alle Menschen sind Philosophen*. München, Zürich: Piper, as Popper, K. R. (2004). *Oloi oi anthropoi einai philosophoi*. Translated by M. Papanikolaou. Melani.
- Popper, K. R. (1957 [1944]). *The Poverty of Historicism*. The Beacon Press, as Popper, K. R. (2005). *I endeia tou istorikismou*. Translated by A. Samartzis. Evrasia.
- Popper, K. R. & Marcuse, H. (1971). *Revolution oder Reform?* München: Kösel, as Popper, K. R. & Marcuse, H. (2005). *Epanastasi I metarrythmisi*. Translated by T. Stergiou. Iridanos.
- Popper, K. R. (1995). *Alles Leben ist Problemlösen: über Erkenntnis, Geschichte und Politik*. München, Piper, as Popper, K. R. (2011). *I zoi einai epilysi provlimaton*. Translated by I. Krippas. Melani.
- Popper, K. R. (1974). *Unended Quest: An Intellectual Autobiography*. Fontana Collins, as Popper, K. R. (2018). *Aenai anazitisi: Aftoviografia*. Translated by K. Alatzoglou-Themeli. Academy of Athens.

References

- Alatzoglou-Themeli, Kiki. (2019). Giati na metaphrasoume tin Aenai Anazitisi, tin aftoviografia tou Karl Popper? Paraleipomena. *Philosophia: Journal of the Research Center for Greek Philosophy*. Academy of Athens. 171-179.
- Archontas, G. (2013). Oi thesmikes proypotheseis tis logodosias [The institutional prerequisites of accountability]. In *Anoichti Koinonia*, 22/2/2013. <https://anoiktikoinonia.wordpress.com/2013/02/22>.
- DiaNEOsis (2018; 2019; 2022). Ti pistevoun oi Ellines [What do Greeks believe?] *National Survey*. Last accessed 25/12/2022 at https://www.dianeosis.org/wp-content/uploads/2022/04/tpe_2022_part-A.pdf
- Dimitrakos, D. (1981). Le criticisme chez Popper et Gramsci. In Bouveresse R. (Ed.) *Karl Popper et la science d'aujourd'hui*. Actes du colloque organisé au centre Culturel de Cerisy-la Salle du 1er au 11 juillet 1981 (pp. 199-210). Aubier.
- Dimitrakos, D. (1991) [1989]. La dialectique chez Hegel et Marx et ses critiques contemporaines. In Bouveresse R. & Barreau H. (Eds.) *Karl Popper Science et Philosophie* (pp. 319-328). Vrin.
- Dimitrakos, D. (1999). Alitheia kai anoichti koinonia. *Epistimi kai koinonia*. Vol. 2-3, pp. 171-196.

- Dimitrakos, D. (2011). Otan irthe stin Ellada o Karl Popper [When Karl Popper visited Greece]. In *Ratio Vincit*, 19/7/2011. <https://ratiovincit.com/2011/07/19>.
- Dimitrakos, D. (2014). Philosophia, Ideologia kai Kritiki [Philosophy, Ideology and Critique]. In *Ratio Vincit*, 21/09/2014. <https://ratiovincit.com/2014/09/21>.
- Dimitrakos, D. (2019). I anatryptiki philosophia tou Karl Popper. *Philosophia: Journal of the Research Center for Greek Philosophy*. Academy of Athens. pp. 217-227.
- Despotopoulos, K. (1978). *Meletimata Politikis Philosophias*. Papazisis.
- Despotopoulos, K. (1988). *Politiki Philosophia tou Platonos*. Papazisis.
- Drakopoulos, S., Gotsis G. & Grimanis A. (2015). *Methodologia Koinonikon kai Oikonomikon Epistimon*. Kallipos.
- Gemtos, P. (1987). *Methodologia ton Koinonikon Epistimon*. (2nd edition 2004, 3rd edition 2016). Papazisis.
- Goutsia, M. (2019). Ta ithika themelia tis epistimologias tou Karl Popper. *Philosophia: Journal of the Research Center for Greek Philosophy*. Academy of Athens. pp. 208-216.
- Kalfas, V. (1983). *Epistimoniki proodos kai orthologikotita*. Synchrona Themata.
- Karachalios, M. (1993). *Sociologie de la connaissance et critique du holism: Karl Mannheim-Karl Popper*. Doctoral thesis. University of Athens.
- Kinti, V. (2019). I simasia tou Karl Popper sti philosophia tis epistimis. *Philosophia: Journal of the Research Center for Greek Philosophy*. Academy of Athens. pp. 179-193.
- Kirk, G. S. (1960). Popper on Science and the Pre-Socratic, *Mind*. 69, pp. 318-39.
- Kirk, G. S. (1961). Sense and Common-sense in the Development of Greek Philosophy. *Journal of Hellenic Studies*, Vol. 81, 105-7.
- Kosteas, V. (2021). *Freedom and Justice in the Context of the Open Society*. Doctoral thesis. University of Athens.
- Kouzelis, G. & Psychopedis K. (Eds.). (1994). *Epistimologia ton koinonikon epistimon*. Nisos.
- Kouzelis, G. (1997). *Epistimologia*. Nisos.
- Lloyd, G. E. R. (1967). A Controversy in the Interpretation of Greek Science. *The British Journal for the Philosophy of Science*. 18(1), 21-38.
- Makris, S. (2013). *Popper: Diapsefsimotita, Istorikismos kai Anoichti Koinonia*. Sideris.
- Metaxopoulos, A. (1988). *Symvasi kai Alitheia: Peripeteies tis Synchronis Epistimologias apo ti thesi Duhem eos ti methodologia tou Lakatos*. Papazisis.
- Patelis, G. (2022). *Karl Popper's critique of Plato's views in the Republic*. Doctoral thesis. University of Athens.
- Pappas, T. (2002). *I Methodologia tis Epistimonikis Erevnas stis Anthropistikes Epistimes*. Kardamitsa.
- Popper, K. R. (1945). The Spell of Plato, in: *The Open Society and its Enemies*, Vol. 1. Rutledge and Kegan Paul.
- Popper, K. R. (1945b). The High tide of Prophecy: Hegel, Marx and the Aftermath, in: *The Open Society and its Enemies*, Vol. 2. Rutledge and Kegan Paul.
- Popper, K. R. (1958-9). Back to the Pre-Socratic, *Proceedings of the Aristotelian Society*. Vol. 59, pp. 1-24.
- Popper, K. R. (1959) [1934]. *The Logic of Scientific Discovery*. Basic Books.
- Popper, K. R. (1963). *Conjectures and Refutations*. Rutledge and Kegan Paul.
- Popper, K. R. (1972). *Objective Knowledge: An Evolutionary Approach*. Clarendon Press.
- Popper, K. R. (1974). *Unended Quest: An Intellectual Autobiography*. Fontana Collins.
- Popper, K. R. (1998). *The World of Parmenides: Essays on the Pre-Socratic Enlightenment*. Arne E. Petersen (ed.). Rutledge.
- Psillos, S. (2001). Karl Popper: O kalos, o kakos kai o aschimos. *Antifono*. Last Accessed in 25/12/2021. <https://webcache.googleusercontent.com/search?q=cache:zOBWxuyP0x0J:https://antifono.gr/sp-2062624101/&cd=2&hl=en&ct=clnk&gl=nl>.
- Tsatsos, K. (2005). *I Koinoniki Philosophia ton Archaion Ellinon*. Estia.

-
- Virvidakis, S. (2019). O kosmos 3 tou Karl Popper os ermineftiki protasis gia tin katanoisi ton montelon metriopathous axiakou realismou. *Philosophia: Journal of the Research Center for Greek Philosophy*. Academy of Athens. pp. 194-207.
- Vlastos, G. (1973). *Platonic Studies*. Princeton University Press.

Popper in Latin America

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ABSTRACT

The reception and influence of Popper's philosophy of science and his political philosophy in Latin America have depended heavily on the translation of his major works originally published in German and English. Thus, for example, *The Logic of Scientific Discovery*, which was originally published in 1959, was translated into Spanish in 1962 and into Portuguese only in 1974. Similarly, *The Open Society and Its Enemies*, originally published in 1945, was translated into Spanish twelve years later in 1957 and into Portuguese in 1974. But apart from a discussion of the impact of the translations of his books, I also want to show that the political situation in some Latin American countries, for example, Chile, Cuba and Peru, has played a very important role in the introduction, reception and influence of Popper's philosophy of science in general and his social and political thought in particular. Accordingly, the main purpose of this article is to examine the reception of Popper's ideas in Latin America and give an account of his influence and legacy in some of the Latin American countries such as Argentina, Brazil, Chile, Colombia, Cuba, Mexico, Peru and Uruguay.

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When Sir Karl Popper died on 17 September 1994, it was internationally recognized that he had been one of the most important and influential philosophers of the 20th century. As David Miller, who was his assistant in the 1960s and then his collaborator for three decades, pointed out:

He made outstanding (in some cases revolutionary) advances in the philosophy of science, the theory of probability, the theory of knowledge, metaphysics, social and political philosophy, and the philosophy of history; he contributed importantly (usually controversially) to our understanding of logic, the history of philosophy (especially the pre-Socratics, Plato, and Marx), classical mechanics, classical thermodynamics, quantum physics, evolutionary biology, psychology, and music. (Miller 2006: 2)

Something quite similar happened in the Iberian sphere when the Spanish philosopher Angeles J. Perona organized at the Facultad de Filosofía of the Universidad Complutense de Madrid a research seminar entitled "Models of Rationality: Philosophy and Science in Karl Popper". This was to celebrate the centenary of Karl Popper's birth. Dr. Perona later expressed her surprise noticing that "Popper's work was more alive than expected and that it continued to motivate us to think and debate". This motivated her to publish a book in 2008 to critically analyze the intellectual legacy of the Austrian-British philosopher. In the presentation of the book *Contrastando a Popper [Testing Popper]*, she says:

Karl Popper (1902-1994) was undoubtedly one of the most influential philosophers of the 20th century. From his *Logic of Scientific Discovery* to *The Open Society and Its Enemies*, through *The Poverty of Historicism* or *The Self and Its Brain*, all his work has produced important changes in the different branches of philosophy: his criticism, his doubts, his alternative proposals extend to the epistemology of the natural sciences, that of the social sciences, political philosophy, metaphysics and the history of philosophy. (Perona 2008:9)

Similarly, now at the Latin American level, a large group of intellectuals from Argentina, Chile, Peru and Uruguay participated in the IV Seminar of the Working Group "Epistemology and Politics", belonging to the Latin American Council of Social Sciences, held in Buenos Aires, Argentina in 1983. The theme of this seminar was "Social sciences and politics (discussion of Karl Popper's theses)". There they met for several days to discuss what they called "the influential Popperian theses on the social sciences". Subsequently, in 2004, the Argentinean philosopher Felix G. Schuster edited the book *Popper y las Ciencias Sociales, [Popper and the Social Sciences]* which contains a large proportion of the papers presented at this Seminar.¹

¹It is puzzling that not even one supporter of Popper's ideas was invited to this conference on Popper and the social sciences. This had the consequence that very debatable and distorting interpretations of Popper were not questioned, among them the claims that Popper was a positivist, a neoliberal and even an anti-democratic liberal.

As highlighted in the Foreword to this book, the organizers of this Seminar recognized that Popper's contributions went far beyond the social sciences and encompassed epistemological and methodological problems related to the natural sciences as well as problems of political philosophy and the philosophy of economics. Finally, it was acknowledged that Popper's thought, "has been influential at the economic and political level". These quotations are just a few examples of the recognition of Popper's importance in different Spanish-speaking countries.

The main purpose of this article is to examine the reception and influence of Popper's philosophy in Latin America. As we know, Latin America is both a geographical and a linguistic term that refers to a region of the American continent made up of twenty countries and characterized by the use of languages mostly derived from Latin, mainly Spanish, but also Portuguese and, to a lesser extent, French. Because of this large number of nations, we can only concentrate this time on the countries with the longest philosophical tradition and the deepest concentration on the problems with preoccupied Popper for more than 75 years. In this sense, because of the breadth of the subject and the limitations of space, our work can only be considered as a preliminary and incomplete study of the presence and legacy of Popper in Latin American countries. Also, I must indicate that the extent of the analysis of each country is just due to the accessible sources of information.

Reception and influence of Karl Popper's philosophy in Latin America

Undoubtedly the reception and influence of Popper and critical rationalism have been closely connected with the access, mainly in Spanish, of Popper's first two and most important works originally published in German and English. Thus, his book *Logik der Forschung* published in Vienna in the autumn of 1934 (with the printing date "1935"), first translated into English in 1959 as *The Logic of Scientific Discovery*, was the basis for the Spanish translation in 1962 under the title *La lógica de la investigación científica*. On the other hand, *The Open Society and Its Enemies*, published in London in 1945, was translated into Spanish in 1957 as *La sociedad abierta y sus enemigos*. These two translations have been the main basis for characterizing Popper as a philosopher or methodologist of science and a philosopher of politics respectively.

Moreover, I will try to show that, in general, Popper as a philosopher of science has been more widely read and influential than as a social and political philosopher. I also believe that Sir Karl's philosophy of politics has been subject to greater distortion and, therefore, to more unjustified criticism than his epistemological and methodological theses, although labeling him a "positivist" has tended to discourage his being read and has prevented a proper understanding of his philosophy of science.

As indicated above, it was only in 1962 that the Spanish version of *The Logic of Scientific Discovery* became available and twelve years later in 1974 in Portuguese as *A Lógica da Pesquisa Científica*. These translations made known the most important issues and problems of scientific methodology analyzed by Popper, among them, his rejection of induction or inductive inference as the method of science, as a method both for discovering and for justifying scientific theories, the adoption of the deductive method of testing scientific theories, that is, the method of critical testing

of theories, the problem of demarcation understood as the search for a criterion to distinguish between empirical sciences (the empirical method) and mathematics or logic and metaphysics and his proposal of falsifiability as such a criterion, his conception of theories as a set of universal statements and his deductive model of scientific explanation.

We know that all these proposals on the logic of scientific knowledge understood by Sir Karl as a theory of theories, were in total disagreement with the theses of the Vienna Circle's Logical Positivism. All this has led to the fact that in the history of the development of the philosophy of science in the 20th century, the theses put forward by Logical Positivism are seen as closely linked to, but diametrically opposed to, Popper's proposals. This has also been the case in Latin America in the study of Popper's philosophy of science.

The following is an alphabetical description and account of Popper's reception and influence in Latin American countries, starting with Argentina.

1. Argentina

It has been thanks to the invaluable assist of Argentine academics and friends that I have been able to obtain adequate information on Popper's impact and importance in the development of philosophy in this country. Thus, for example, the Argentine philosopher Diego Rosende acknowledges that Sir Karl's influence was partly due to the action of the physicist and philosopher Mario Bunge and above all of the mathematician and philosopher Gregorio Klimovsky. Bunge influenced the interest of Klimovsky, who not only permanently disseminated and taught Popper's ideas in his philosophy of science courses at the University of Buenos Aires, but was also close to Popperian thought, as was evident in his book *Las desventuras del conocimiento científico* [*The misadventures of scientific knowledge*] published in 1994. Actually, after Bunge's departure from Argentina, Klimovsky was the philosopher who played the most decisive role in making Popper's ideas known and valued by an important number of students and professionals, among them the inevitably conjectural character of human and scientific knowledge, as well as considering science as a necessarily critical activity. This role has also been expressly highlighted by the Argentine philosopher Alejandro Cassini who, referring to Klimovsky, argues that "in the courses he taught at the Faculty of Philosophy and Letters, he introduced Popper's falsificationism, a position to which he himself always remained close" (Cassini 2017: 9). In fact, Cassini admits that it was Bunge who introduced Klimovsky to Popper's books and that it was certainly the reading of *Logic of Scientific Discovery* that was decisive for the formation of Klimovsky's philosophy of science and, consequently, for the dissemination of Popper's thought.

The importance of Popper's works for Argentine philosophy has also been underlined by the philosopher Gabriel Zanotti who, in the preface of his book *Búsqueda con esperanza* [*Searching with hope*] dedicated to Popper's thought, and whose objectives include attempting a synthesis between Popper's realism and Thomistic realism, states: "Popper's philosophy of science is so important for us that we could say without fear of exaggeration that the philosophy of science as a discipline could be divided into before and after Popper" (Zanotti 1993: 6). However, this

Argentine philosopher analyses in his work not only the methodology and other epistemological problems of Popper's philosophy, but also important aspects of Sir Karl's social and political philosophy.

It must be remarked that the study and dissemination of Popper's philosophy are also due to other universities and some study groups related to epistemology, the philosophy of natural and social sciences, the philosophy of economics and social and political philosophy.

An example of this has been the Bases Foundation in the city of Rosario, which was initially chaired by Federico Fernández, who is a renowned Popper scholar. In fact, in 2004, Fernández organized the International Congress "Karl Popper: validity and transformation of his thought", which took place at the Facultad de Humanidades y Letras of the Universidad Nacional de Rosario. Undoubtedly, this congress was most important in terms of the quality and number of participants and presentations. This meeting was attended by more than thirty distinguished academics from Argentina and other countries, including Fred Eidlin (Canada), David Miller (UK) and Mark Notturmo (USA). I also attended it as an invited Chilean academic. In later years, Bases also organized some conferences on Popper's and von Mises' liberalism, as well as online courses including one given by Notturmo on Popper's philosophy.

Popper's reception and influence have been discussed also in other Argentine universities. For example, at the Facultad de Filosofía y Letras of the Universidad Nacional de Cuyo in Mendoza there has been a group of outstanding researchers from different disciplines, including Guillermo Cuadrado, Ernesto Calderón, Pascual Gargiulo, Santiago Gelonch, Raúl Milone and Juan Torres. All of them have examined and taught different aspects of Popper's philosophy. Their interest in Popper's philosophy led to the organization of an international colloquium "The Thought of Karl Popper" held on 23-25 November 2011. In this meeting in addition to the people mentioned above, David Miller (UK) and I too participated as international guests. To conclude, I should also want to point out that Sir Karl's philosophy of science has been a topic of discussion in several of the more than 30 Jornadas de Epistemología e Historia de la Ciencia del Cono Sur [Conferences of Epistemology and History of Science in the Southern Cone] held at the Universidad Nacional de Córdoba, Argentina.

2. Brazil

In general terms, and as the Brazilian philosopher Otávio Bueno let me know in a personal communication, Popper's reception, importance and influence were undoubtedly immense. Thus, of all the 20th century philosophers of science, Sir Karl has been the most discussed in Brazil by philosophers and scientists alike. Moreover, his influence has been so marked that in general, graduate courses and seminars in philosophy of science were very often organized around his philosophy, for example, in subjects such as Logical Positivism and Popper's criticisms, Popper and the development of Critical Rationalism, the objections and criticisms of Popper made by philosophers such as Kuhn, Lakatos, Feyerabend and Laudan. At least in the early 1990s this was the way the courses were organized.

In addition, Professor of Law, Dr. Vinícius Monteiro de Barros of the Pontificia Universidade Católica de Minas Gerais (PUC Minas), has informed me that the reception of Popper's philosophy has been excellent in the Postgraduate Programme in Law especially where it has been studied in depth. A clear example of this is found in this same university where there is a field of study and research in the Postgraduate Programme in Procedural Law in which Popper's critical rationalism was adapted to scientific research in Law. This was due to the Neo-institutionalist Procedural Theory of Law, proposed by Professor Rosemiro Pereira Leal. Professor Leal is co-founder of the Postgraduate Programme of PUC Minas. He is also founder and honorary president of the Popperian Institute of Legal Studies (INPEJ).

Everything said above shows that critical rationalism has been quite influential and very positive especially in Law. As we have already highlighted, Popper's ideas influenced Professor Leal to create a Legal-Procedural Theory (Process in the Implementation of the Democratic Rule of Law) which has served since 1997 until today as an important source of research for PUC Minas students at the graduate level in Law as well as in Master, Doctoral and Post-Doctoral programmes in Law.

Professor Barros has also pointed out that the epistemology of critical rationalism has been at the basis of all the courses that he teaches at PUC Minas, among them "Criminal Law", "Criminal Procedural Law" and "Epistemology of evidence in the criminal process". Moreover, Barros indicates that there have been some obstacles preventing a more extensive and in-depth study of Popper's thought. Among them is the accusation popularized by Habermas and uncritically accepted by students and academics that Popper was nothing more than a positivist.

3. Chile

In Chile, the presence and importance of Popper's critical rationalism has been, as in other Latin American countries, mainly related to the development of philosophy of science as an autonomous discipline cultivated exclusively in universities and their undergraduate and postgraduate programmes. But, concerning Popper's socio-political philosophy, its reception and influence in Chile was closely linked to the existence and influence of the main ideological trends of the 1960s and early 1970s. On the one hand, were the communitarian philosophy put forwarded by Emmanuel Mounier and the integral humanism of Jacques Maritain and, on the other, the Marxist socialist thought and the influence of the Cuban revolution on the left-wing political parties. Thus, the doctrines of Mounier and Maritain were the ideological basis of the Christian Democratic Party which, under the slogan "Revolution in Freedom", led the lawyer Eduardo Frei Montalva to the presidency of Chile (1964-1970).

Subsequently, the election of the doctor and founder of the Socialist Party Salvador Allende Gossens, supported by the Chilean Communist Party and groups admiring Fidel Castro and Che Guevara, meant that Marxist doctrines practically dominated the spaces of ideological discussion, especially among many of the academics and students in Chilean universities. In these circumstances, the reception and influence of liberal thinkers, especially Popper and his devastating criticisms of Marxism, were almost impossible.

Regarding the study of the philosophy of science, especially Popper's philosophy of science, I think it was due to the return to Chile of some academics who left the country to specialize in epistemology and philosophy of science. So it happened, for example, with the Chilean philosopher and Professor at the Instituto de Filosofía of the Pontificia Universidad Católica de Chile, (PUCCH) Dr. Luis Flores Hernández, who informed me that he became acquainted with Popper's works during his studies in France (1972-1976). After Flores returned to Chile, Karl Popper was an essential author in Flores's philosophy of science courses, a discipline that did not exist in the study programmes at PUCCH. Thus, students had to read selected texts from *The Logic of Scientific Discovery*, *Objective Knowledge* and *Conjectures and Refutations*. This also happened in my case when I returned to Chile after four years of specialization in philosophy of science in the USA (1974-1979).²

For Flores, Popper's works have been of crucial importance for the development of the philosophy of science since Sir Karl has been a necessary bridge to understand the transition between the Vienna Circle and post-positivist authors. The importance attributed to the Viennese-British philosopher in Chilean philosophy of science was clearly manifested when the Faculty of Philosophy of the PUCCH organized the International Symposium "Karl Popper and Critical Rationality" (16-18 November 1988, Santiago de Chile). This activity was coordinated by Prof. Flores and was sponsored by the Austrian Embassy. I was able to participate in this activity as one of the academics from six Chilean universities. The international guest was the philosopher Paul Weingartner from the University of Salzburg. This number of Chilean academics and their contributions to this Symposium showed that already in the late 1980s Popper's philosophy was more widely known and studied.³

In addition, the opening of postgraduate programmes has also been very important for the study of Popper's philosophy of science. This, for example, was brought to my attention by the Chilean philosopher Juan Omar Cofre, a former member of the Universidad Austral de Chile. According to him, in 1978 the first Master's programme in Philosophy offered in Chile was inaugurated at that university by the Department of Philosophy of the Faculty of Philosophy and Social Sciences. In 1986, one of the courses in that programme was "Popper and Bunge: two conceptions of science". On the other hand, Popper's political philosophy was not studied, let alone confronted with other

² At the University of Chile, Valparaíso campus, in the sixties and seventies, there was no course or seminar in philosophy of science in the undergraduate programme. As an academic in the Department of Philosophy I obtained a Fulbright scholarship to travel to USA in 1974 to specialize in the philosophy of science. After my return to Chile in 1979, I was able to establish and teach, for the first time, some courses and seminars in the philosophy of natural and social sciences including, of course, Popper's philosophy of science. Later on, when the Master's programmes in Philosophy of Science were created at the University of Santiago in 1986 and then a similar one at my own university in 1987, I was able to teach Popper's philosophy of science in both programmes.

³ Actually, the academics invited to the Symposium were from the most important universities such as the Universidad de Chile, Pontificia Universidad Católica de Chile, Universidad Católica de Valparaíso, Universidad de Santiago de Chile y Universidad de Valparaíso.

liberal or Marxist thinkers. Finally, Cofre remembers that he read Popper for the first time during his undergraduate studies in 1972, precisely in a philosophy of science course.

At the University of Chile, which is the oldest institution of higher education in Chile, the study of Popper was apparently due, according to a personal communication with Professor Luis Ramirez, to the first philosophy of science courses given by Professor Jorge Estrella in the 1960s and 1970s. In these courses, Popper's philosophy of science began to be analyzed. Nowadays these courses are taught by Ramírez and include the reading of Popper's *The Logic of Scientific Discovery*. However, one cannot speak of a real influence of Popper at the University of Chile, but he is certainly studied alongside other classical philosophers of science such as Hempel, Feyerabend and Kuhn. Another important factor for the development of the philosophy of science in Chile was the creation of Master's programmes in Philosophy of Science at the University of Santiago of Chile in 1986 and at the University of Valparaíso in 1987. In both programmes I was responsible for deepening the study of Popper's epistemology and philosophy of science.

Certainly, in the last two decades Popper's philosophy of science has become widely known and has been the focus of continued interest and discussions. For instance, for the purpose of commemorating the twentieth anniversary of Karl Popper's death, the Centre for Studies in Science, Technology and Society and the Instituto de Filosofía of the Universidad de Valparaíso organized the International Colloquium "The Legacy of Karl Popper: Reflections 20 years after his death", which took place on 22 and 23 September 2014. In this activity, which was attended by international guests among them David Miller (University of Warwick, UK), Jeremy Shearmur (Australian National University), Angeles Jiménez Perona (Universidad Complutense de Madrid, Spain), it was my privilege to participate on behalf of the Universidad de Valparaíso, Chile.

It is also worth noting that Popper's socio-political philosophy has been advanced by the Public Studies Center [Centro de Estudios Públicos – CEP] in Santiago, which is a private non-profit organization of an academic nature and enjoys national and international fame. Founded in 1980, one of its most fundamental objectives is to contribute to the knowledge and dissemination of those values and principles that are at the basis of an open, free and democratic society.

In fact, in 1989 the journal *Estudios Públicos*, which belongs to the CEP, invited me to contribute to the publication of the work "Selección de escritos políticos de Karl Popper" ["Selected socio-political writings of Karl Popper"], which also included a brief introduction to Popper's philosophy. In 1996, after Popper's death in 1994, the same journal published my article "La filosofía de la ciencia de Karl Popper" ["Karl Popper's Philosophy of Science"].

But sadly, to say, Popper's political philosophy has not been studied much in Chile. And in some universities his theses have been disfigured by academics of a clearly Marxist and anti-liberal bent, accusing Popper of being, along with Hayek, simply a representative of neo-liberalism, or claiming that Popper's open society would be nothing more than a capitalist consumer society, and even questioning the democratic character of Popper's political philosophy.

Finally, we would like to show that although Popper has not played a role in the ideological bases of Chilean political parties, he has indeed exerted an important influence on two Chilean

writers and politicians who have played a prominent role in Chilean politics and who have publicly acknowledged their intellectual debt to Popper for their liberal views opposed to socialism. The first of these is the internationally renowned writer Roberto Ampuero, who served as Chile's ambassador to Mexico and Spain and later on as Chile's Minister of Foreign Affairs (2018-2019). The second is Mauricio Rojas, an economist, writer and politician, of Chilean and Swedish nationality, who is a former member of parliament for the Liberal People's Party of Sweden. In 2018, Ampuero and Rojas published the book *Diálogo de conversos* [*Dialogue of converts*], dedicated to Mario Vargas Llosa, whom they recognize as a "liberal friend and teacher of converts". The main purpose of the book is to show the transition that both had in their philosophical and political development from Marxist socialist positions to liberal stances. In this process of political change, Mauricio Rojas acknowledges the influence of Popper's and Isaiah Berlin's philosophy.

Similarly, Roberto Ampuero recognizes the importance of taking Popper's advice to heart when liberalism, without the necessary attitude of modesty and intellectual humility, attempts to solve economic, social and political problems:

This sense of modesty in the face of proposed solutions is something I have missed in a certain liberalism that sometimes seems as utopian as communism. Progress towards greater freedom for more and more people should be seen from a "Popperian" perspective, i.e., as a process of trial and error, where each expansion of freedom can bring new dilemmas and where state intervention should not be stigmatized a priori. (Ampuero and Rojas 2018: 205)

However, the importance and influence of Popper on Ampuero's philosophical and political thought became much more evident in a personal communication where he refers to this subject and informs me that he read Popper in German in 1983 after emigrating from communist Germany to the West. The book that most influenced his political conception was *The Open Society and Its Enemies* and what most captured his interest was the analysis therein of the role of Plato, Hegel and Marx in the development of historical determinism and the difference between an open society and a closed, totalitarian society. This was to be expected after he had lived between 1974 and 1982 under the totalitarian regimes of the German Democratic Republic and Fidel Castro's Cuba.

Ampuero also informed me that the subject of that book was not a purely intellectual but a vital issue. He fully identified with Popper because Sir Karl destroyed the essence of his communist creed, namely the conviction that communism, due to the laws of history, was an inevitable stage in human history.

I cannot end without reporting Roberto Ampuero's response to the question of which of Popper's theses or opinions on social and political philosophy are still important and valid in the political sphere in general and particularly in Chile. According to this prominent writer and politician, they are, among others, the demystification of Marx's historicist determinism; the clarification of the essence of totalitarianism and its contrast with the open society; the crucial role of ideologists and

their philosophical account, as well as that of politicians in the imposition of totalitarianism and, finally, the paradoxes of tolerance that afflict the open society.

4. Colombia

As for Colombia, Dr. German Guerrero of the Universidad del Valle, Cali, has informed me that it was Popper's philosophy of science and epistemology that had the greatest influence in this country in almost the last three decades of the twentieth century. In fact, it was around Sir Karl's philosophy of science along with the philosophy of logical positivism, Kuhn's historicist vision and Feyerabend's epistemology that philosophy of science studies were institutionalized in Colombian universities. Popper's influence in this country has been clearly acknowledged. In his article "La filosofía de la ciencia en Colombia. Historia de su desarrollo", ["The philosophy of science in Colombia. History of its development"] the Colombian philosopher Juan C. Moreno says:

In addition to the previous approaches to Logical Positivism, the birth of the Philosophy of Science in Colombia had as 'pioneering' contributions some publications and translations on the philosophical thought of Karl Popper developed towards the end of the seventies and especially during the eighties by the following authors: Carlos B. Gutiérrez (1977), from the Universidad de los Andes, Adolfo León Gómez (1978), from the Universidad del Valle, Rubén Sierra Mejía (1979 and 1985), from the Universidad Nacional de Colombia, and Blanca Inés Prada (1983), from the Universidad Industrial de Santander.(Moreno 2010: 161).

I think that it is important also to mention other authors such as Carlos García Duque of the Universidad de Caldas y Jorge Mejía Escobar of the Universidad de Antioquia.

Besides Professor Guerrero has remarked that given the diversity of topics and problems that have been part of Popper's thought, among them some of a general nature such as epistemology, the philosophy of empirical sciences, ontology, social and political philosophy, as well as more specific problems such as the mind-body problem and interpretations of the probability calculus, it is not strange that his contributions to these fields have been subjected to diverse studies, analyses and criticisms by Colombian scientists and philosophers, for example, at some Faculties of Social Sciences and Economics.

It should also be noted that around 2007 the "Mundo 3" research group headed by Dr. Campo Elías Burgos emerged with the aim of proposing an educational theory based on Popper's critical rationalism. Subsequently, in 2010, Burgos published the book *Teoría de la Educación según el Racionalismo Crítico de Karl Popper: bases epistemológicas y teoría sociopolítica* [Theory of Education according to Karl Popper's Critical Rationalism: epistemological bases and socio-political theory].

5. Cuba

As was to be expected, Popper's presence and influence on the philosophy of science and political philosophy in Cuba has been strongly linked to the socialist definition of the Cuban political regime in 1961. As the Cuban academics Jorge Núñez Jover, Lourdes Alonso Alonso and Grisél Ramírez Valdés state in their article "La filosofía de la ciencia entre nosotros: evolución, institucionalización y circulación de conocimiento en Cuba" ["The philosophy of science among us: evolution, institutionalization and circulation of knowledge in Cuba"] (2015), the development and evolution of the philosophy of science in that country has been closely linked to the socio-political and also ideological context. It should be noted that these academics have been directly involved in the development of this area of philosophy, especially as members of the Universidad de La Habana. They also point out that the first attempt to distance themselves from official Soviet philosophy between 1964 and 1971, carried out in the Department of Philosophy of the University of Havana and in the journal *Pensamiento Crítico*, [*Critical Thinking*] ultimately failed. In fact, both this department and the journal were closed down in 1971.

From then on, the conceptions and schemes of official Soviet philosophy, including the doctrines of dialectical and historical materialism, became hegemonic. As a result, when the undergraduate programmes in philosophy were opened in 1976 at the Universities of Havana and Oriente, the curricula that had to be adopted, and in which there was no mention of philosophy of science or epistemology, were mainly those existing at Moscow State University.

On the other hand, the authors of the article stress that, in fact, all contributions and studies of science coming from the Western world were often labeled as "bourgeois philosophy" and thus ignored or critically mentioned. The main modification of this situation of complete domination of the general view of philosophy and philosophy of science in particular occurred only from 1982 onwards. The following events were crucial factors for this change. As this quote from page 5 of the article mentioned above indicates:

The creation of the Latin American Society for the History of Science and Technology in 1982 (Puebla, Mexico), the publication of the journal *Quipu* and the holding of its first congress in Havana in 1985, generated important contacts and intellectual influences that led us to think about science in its history and context (Saldaña 1982; Polanco 1986). Between 1982 and 1984 our bibliographic holdings were enriched, basically through personal efforts, with important works of the Western philosophy of science: Popper, Kuhn, Lakatos, Feyerabend and the debates among them. (Suppe 1979)

More recently, a clear and open recognition of the importance of Popper's epistemology and philosophy of science in Cuba can be found in the book *Filosofía de la ciencia I. Selección de lecturas* [*Philosophy of science I, Selected readings*], edited by Grisél Ramírez and María de Lourdes Alonso in 2011. In this publication, it is recognized that "The first fundamental work of the Viennese epistemologist Karl Popper (*The Logic of Scientific Discovery*) is, in our time, the

obligatory point of reference for all epistemological work" (Ramírez and Alonso 2011: 86). Moreover, this book includes an article I wrote on Popper and scientific explanation, which was the first one to be included in a selection of texts intended for the teaching of the philosophy of science in Cuba.

Finally, it is quite obvious that the socialist-Marxist regime in Cuba is a clear example of what Popper has characterized as a closed society, i.e., one opposed to political freedom and the right of citizens to criticize their rulers. This amply explains why *The Open Society and Its Enemies* and *The Poverty of Historicism* have not been studied, let alone taught in Cuban universities.

6. Mexico

As has been the case in other Latin American countries, Popper's philosophy of science and social and political philosophy have had a great influence on the formation and philosophical perspectives of a large group of Mexican philosophers and academics. Dr. Armando Cántora, Professor in the Department of Philosophy at the Universidad Autónoma Metropolitana-Iztapalapa and author of the book *Los Presupuestos Irracionales de la Racionalidad* [*The Irrational Assumptions of Rationality*] published in 2005, has informed me that among them are Dr. Ambrosio Velasco Gómez of the Universidad Nacional Autónoma de México, Dr. José de Lira Bautista of the Universidad Autónoma de Aguas Calientes and Dr. Luz María Chapa Azuela of the Instituto Tecnológico Autónomo de México. The impact and influence of Karl Popper's philosophy were mostly related to various problems in the areas of both the philosophy of science and political philosophy. Although the importance of Popper's thought was recognized mainly in the last decades of the twentieth century, this influence continues and is indispensable in postgraduate studies and in the training of any philosopher who wishes to participate in current discussions and debates in the aforementioned areas.

A good example of the continuing importance and influence of Popper's philosophy in current debates in México was the International Colloquium Popper-Kuhn Fest 2012, held in October 2012 (15-17). The opening addressed was given by David Miller on the pragmatic problem of induction. And the closing address, also by Miller, was on decision making under uncertainty and risk. This meeting was attended by academics from Argentina and Colombia as well as from several Mexican universities.

7. Peru

As in the case of Cuba, the analysis of the reception and importance of Popper's philosophy in Peru cannot be understood without recalling the political situation in the country after the removal of President Fernando Belaúnde Terry, who governed the country from 1963 to 1968. In that year, Belaúnde had to leave power after being ousted by the military coup led by the left-wing nationalist general Juan Velasco Alvarado, who ruled Peru from 1968 to 1975.

Velasco's government was characterized by profound changes in Peru's economic, social and political structure and by a total rejection of liberal political and economic ideas. In fact, his government was considered the highest representative of what was called "Latin American Military

Socialism". This government, also known as the Revolutionary Government of the Armed Forces, was overthrown in 1975 by another military coup led by General Francisco Morales Bermúdez. This second stage of the military government was characterized by the fact that he canceled many of the reforms initiated by Velasco and called a new democratic election. As I will show, the influence of Popper's political philosophy was already present before and after the Velasco government.

All this political review allows a deeper understanding of the information provided to me by Professor Richard Orozco of the Universidad Nacional Mayor de San Marcos (UNMSM) according to which during the 1960s and 1970s the identification of epistemology with the philosophy of science was mostly due to the influence of Marxist tendencies that conceived the problems of knowledge simply as related to scientific knowledge. This Marxist influence meant that Popper's works were absent from the official bibliography. This was also pointed out to me by Dr. Raymundo Casas in a personal communication stating that the reception and importance of Popper in Peru took place at the end of the 1970s when the teaching of historical materialism was shifted towards the philosophy of science at the UNMSM.

Although at first this shift was centered on the conception inherited from Logical Positivism, gradually Popper's conception of science became increasingly significant. Also, the enormous difference between the doctrines of the Vienna Circle's logical positivism and Popper's ideas had to be acknowledged. Here we can cite Casas's illuminating and important essay entitled "La epistemología en el Perú: una aproximación crítica" ["Epistemology in Peru: a critical approach"] (2007) in which, after describing the inherited conception of scientific theories, he rejects the frequent misrepresentation of Popper as another neo-positivist philosopher. Casas, in addition to recognizing Popper's historical importance as a hinge between logical positivism and the later historicist trends initiated by Kuhn, points out:

Although it can be said that Karl Popper's approaches form the background to some of the epistemological work carried out in Peru, there is still no overall view that can gauge the true scope of the master of the *London School of Economics*. Only the notion of falsifiability has been elucidated (on the basis of the technical notion of the potential falsifier) but Popper's critical approach has not been subjected to a revealing or exhaustive treatment. (Casas 2007:206)

Thus, before this shift from Marxist conceptions that has been very influential during Velasco's regime, Popper's philosophy was very limited in the most important Peruvian universities such as the UNMSM and the Pontificia Universidad Católica del Perú. Apparently, according to Orozco, some knowledge of Popper's philosophy of science would have been due to Dr. Julio Sanz (1938-1997), who was the founder of a whole school of philosophy of science at the UNMSM and of disciples with a clear Popperian tendency, among them the philosophers Luis Piscoya and Carlos Alvarado de Piérola.

In more recent times, one of the most important acknowledgements of the presence and validity of Popper's epistemology and philosophy of science was the organization of the IV International Colloquium on Epistemology "Rethinking Karl Popper: 25 years after his death" (24-26 October 2018). This Colloquium, which took place at UNMSM, brought together Peruvian and international philosophers such as David Miller (UK), Carlos Verdugo (Chile), Alexander Gómez (Colombia) and Diego Rosende (Argentina).

Concerning Popper's social and political philosophy, I believe that it had a clear relevance and influence in two quite distinct moments in Peru's political history. The first it is related to the emergence of Acción Popular [Popular Action], the political party founded in 1956 by Fernando Belaúnde Terry, who in turn was the creator of the party's ideology called "Perú como Doctrina" ["Peru as a Doctrine"]. Belaúnde was president of Peru for two terms: from 1963 to 1968 and then from 1980 to 1985. The party was originally conceived as a center-left party close to democratic socialist positions. The development and theoretical foundation of Acción Popular was largely carried out by the prominent Peruvian philosopher Francisco Miró Quesada, who was Minister of Public Education during Belaúnde's first government.

In the first part of his book *Acción Popular. Manual Ideológico. Primera parte* [Popular Action. Ideological Manual. First part] published in 1964, Miró Quesada rejects what he calls "speculative ideologies", the greatest example of which would be Hegel's philosophy. On the contrary, he defends ideologies that he calls "axiomatic ideologies", Acción Popular being one of them. The latter ideologies are characterized by the use of new methods close to science itself as well as by their rigor and clarity. According to this Peruvian philosopher, important examples of these ideologies are, in addition to the research of Karl Mannheim and Schumpeter, "Karl Popper's criticisms of speculative ideologies". In a footnote Miró Quesada, after naming Popper's books, *The Open Society and Its Enemies* and *The Poverty of Historicism*, states that "These two works are decisive in the modern process of the critique of ideologies" (Miró Quesada 1964: 242).

Moreover, twenty-four years later in 1988 in the book written by Belaúnde Terry et al., *El Perú como doctrina, aportes a la tesis* [Peru as a doctrine, contributions to the thesis], Miró Quesada in his article "Las ideologías y Acción Popular" ["Ideologies and Popular Action"], criticizes materialism and its claims such as that only matter exists and that, therefore, the spirit does not exist, as well as the assertion "that consciousness is nothing but a product of matter... that everything that happens in consciousness is nothing but a consequence of physiological brain mechanisms" (Miró Quesada 1988: 17). Most noteworthy here, is his appeal to mind-body philosophy, in particular, the interactionist thesis advocated by Popper and Eccles. Thus, Miró Quesada wrote:

There is an extremely interesting book, which I enthusiastically recommend to anyone interested in the problem of matter and spirit, written by the greatest specialist in brain physiology in recent years, Professor Eccles, and by a philosopher who is well known above all to scientists and those interested in the

philosophy of science, Karl Popper, entitled "The Self and Its Brain", which shows how the latest studies of brain physiology do not allow any conclusion to be reached about the material composition of psychic processes. (Miró Quesada 1988: 17)

But, undoubtedly, the most important and recent example of the influence of Popper's political philosophy on some prominent intellectuals who have ventured into real politics is the case of the world-famous Nobel Prize winner, the Peruvian novelist, essayist and playwright Mario Vargas Llosa. He was the founder of the Movimiento Libertad [Liberty Movement] and in coalition with the aforementioned Acción Popular party and the Partido Popular Cristiano [Christian Popular Party] he presented his presidential candidacy in 1990, which was not as successful as expected.

In his early youth he became associated with the Communist Party. Later an admirer and supporter of the Cuban revolution, Vargas Llosa became totally disillusioned with Fidel Castro in 1971 following the famous case of the self-criticism of the Cuban poet Heberto Padilla imposed by Castro. This episode was to produce a complete turnaround that led him to a total rejection of Marxist socialism and, later, to a liberal position that he has never abandoned. It is precisely in this development of the Peruvian writer's political thought that Popper's influence is clearly manifested.

His intellectual and political evolution from socialism to liberalism has been described in detail by Vargas Llosa himself in his book *La llamada de la tribu* [*The call of the tribe*] published in 2018. In this work, he explains that coming to liberalism was a process of intellectual reflection that lasted several years. Thus, he confesses that his stay since the late seventies teaching at the University of London allowed him to get to know Thatcher's government and the importance of Hayek and Popper in it. Vargas Llosa says of it:

She had no qualms about saying that she consulted Friedrich von Hayek and that she read Karl Popper, whom she considered the greatest contemporary philosopher of freedom. I read both of them in those years and since then *The Open Society and its Enemies* and *The Road to Serfdom* have become my bedside books. (Vargas-Llosa 2018: 12)

As he stated in the same book, he considers Popper's *Open Society and its Enemies* to be a key and fundamental book for the formulation and defence of modern liberal and democratic thought, as well as his gradual approach to the liberal democratic method for a piecemeal consensual transformation of society.

Finally, I think the following quote from the chapter on Popper clearly shows the importance and influence of Popper on Mario Vargas Llosa:

I will quickly say, as I hope has been documented in these pages, that I consider Popper to be the most important thinker of our time, that I have spent a good part of the last thirty years reading and studying him, and that if I were asked to point out the most fruitful and enriching book on the philosophy of politics of the 20th

century, I would not hesitate for a second to choose *The Open Society and its Enemies*. (Vargas Llosa 2018: 125)

All of the above leads us to state that Peru is one of the countries where the influence of Popper's critical rationalism expressed in his political philosophy has been most evident and relevant.

8. Uruguay

Unfortunately, we have not been able to obtain much information on the reception and importance of Popper in Uruguay. Only thanks to a personal communication from Professor Lucía Lewowicz of the Department of History and Philosophy of Science at the Universidad de la República, I can say that except in terms of undergraduate and postgraduate teaching and the undisputed recognition of Popper's role in the history of the development of the philosophy of science, his presence and influence have been rather scarce. As she has also pointed out to me, his own relation to Popper's political philosophy has been rather critical, especially of fragmentary social engineering, and she considers Popper not simply a liberal but rather a neo-liberal.

Conclusions

Several Latin American countries have recognized the importance and influence of Karl Popper's philosophy of science and social and political philosophy. In relation to his philosophy of science, Popper's ideas began to be known after the translation of *The Logic of Scientific Discovery* (1959) into Spanish in 1962 and into Portuguese in 1974. The same happened with regard to his political philosophy after *The Open Society and Its Enemies* (1945) was first translated into Spanish in 1957 and into Portuguese in 1974.

Even under certain adverse political conditions as happened especially in Cuba before the 1980s, Popper's philosophy of science has been present and studied mainly in the postgraduate programmes of Latin American universities. It has also been shown that the development of philosophy of science as an autonomous philosophical discipline has been a decisive factor in the reception and influence of Popper. His critical rationalism has been the basis in countries such as Brazil not only for the development of lines of research in law, but also for the creation of new and very important academic institutions such as the Popperian Institute of Legal Studies founded in Belo Horizonte, Brazil.

In the vast majority of Latin American countries, for example, Argentina, Chile, Peru and Colombia, the interest and impact of Popper's philosophy has led to the organization of numerous conferences, symposia and international meetings on his contributions to the philosophy of science and politics. Although for reasons of time and space we have not attempted to survey the publications that have been made on Sir Karl's work, they have been and will continue to be numerous.

A somewhat unexpected result has been to note the influence and validity of Popper's political philosophy in the political life of Peru and, to a lesser extent, Chile. We believe that one of the main reasons for the ignorance and rejection of Popper's political philosophy is that he has been identified as a defender of neo-liberalism and the excesses of an unfettered capitalism without

social sense. On the other hand, in the area of philosophy of science, there has been a tendency to ignore his work by appealing to the unfounded legend of his being, especially in the social sciences, a mere representative and defender of neo-positivism.

Finally, I do hope that in Latin America, Popper's philosophy will continue to be considered not only as an indispensable part of the training of any serious researcher in the philosophy of science, but also a necessary and effective means to protect and advance an open and democratic society.

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References

- Ampuero, R. & Rojas, M. (2015). *Diálogo de conversos*. Sud americana.
- Belaúnde, F. et al. (1988). *El Perú como doctrina. Aportes a la tesis*. Acción Popular.
- Burgos, C. E. (2007). *Teoría de la Educación según el Racionalismo Crítico de Karl Popper: bases epistemológicas y teoría sociopolítica*. Universidad Sergio Arboleda.
- Casas, R. (2007). La epistemología el Perú: Una aproximación crítica. *Letras* Vol. 78, 197-222.
- Cassini, A. (2017). Los orígenes de la filosofía de la ciencia en Argentina (1940-1966). *Cuadernos de filosofía*, Vol. 69, 59-76.
- Cintora, A. (2005). *Los Presupuestos Irracionales de la Racionalidad*, Anthropos.
- Flores, L. (1992). Sentido y límites de la racionalidad crítica en Popper. *Seminarios de Filosofía* 5: Universidad Católica de Chile.
- Miller, D. (2006). *Out of Error. Further Essays on Critical Rationalism*. Ashgate.
- Miró Quesada, F. (1964). *Acción Popular. Manual ideológico*. Editorial Acción Popular.
- Moreno, J. (2010). La filosofía de la ciencia en Colombia. Historia de su desarrollo. *Praxis Filosófica*, Vol. 31, 159-168.
- Núñez, J., Alonzo, L. & Ramírez, G. (2015). La filosofía de la ciencia entre nosotros: evolución, institucionalización y circulación de conocimientos en Cuba.”. *Revista Iberoamericana de Ciencia, Tecnología y Sociedad-CTS*, 10(28), 1-11.
- Polanco, X. (1986). La ciencia como ficción. Historia y contexto. In X. Polanco & J. J. Saldaña (eds.), *El perfil de la ciencia en América*, Colección Cuadernos Quipu 1, 41-56. SLHCT.
- Ramírez, G. & Alonzo M. (2011). *Filosofía de la ciencia I*. Editorial Félix Varela.
- Saldaña, J. (1982). *Antología de Historia de la Ciencia*. UNAM.
- Schuster, F. (ed.) (2004). *Popper y las Ciencias Sociales*. Editores de América Latina.
- Suppe, F. (1979). *La Estructura de las Teorías Científicas*. Editorial Nacional.
- Vargas Llosa, M. (2018). *La llamada de la tribu*. Alfaguara.
- Verdugo, C. (1989). Selección de escritos socio-políticos de Karl Popper. *Estudios Públicos*, Vol. 35, 333-412.
- Verdugo, C. (1996). La filosofía de la ciencia de Karl Popper. *Estudios Públicos*, Vol. 62, 181-196.
- Zanotti, G. (1993). *Popper: Búsqueda con esperanza*. Editorial de Belgrano.

The Effects of Critical Rationalism on the Development of Critical Thinking Abilities; a case study with senior high school students in Manizales, Colombia

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Article Info	ABSTRACT
Article type: Research Article	Fostering critical thinking among senior high school students in Colombia has been an unfulfilled goal. This undesirable situation has multiple causes: “critical thinking” has become a mere slogan and its meaning and scope have not been clearly specified despite being widely used in the different levels of the education system. Furthermore, the strategies designed to teach critical thinking lack creativity, reinforce rote learning and the sheer repetition of logic rules besides misallocating the goal of reasoning and argumentation by focusing only on rhetorical persuasion. Textbooks and core literature in critical thinking suggest that a critical thinker is someone who always has plenty of arguments to defend her beliefs besides being ready to address even destructive criticism. By contrast, critical rationalism emphasizes the importance of a humble approach, acknowledges error, and portrays a critical thinker as someone who is ready to test her most beloved theories against experience and to reject them in the light of the facts that contradict her beliefs and certainties. We consider that a pedagogical approach enriched with fallibilism might be central for a better education and endorse these views with the results of a case study conducted in Manizales, Colombia, which shows that teaching the basics of logic and argumentation by using the central tenets of critical rationalism fosters critical thinking among senior high school students.
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1. Introduction

The third decade of the 21st century put serious challenges to humankind. The pandemic caused by COVID-19 made clear not only that our health and lifestyle were in danger but also our democracies (Pinker, 2021). Fake news, conspiracy theories and magic answers became more prevalent and the general result was confusion. How to distinguish truth from falsity in a world flooded by irrelevant information? The answer is not easy (Harari, 2018). After science enabled us to develop vaccines to protect us against the virus of COVID-19, we faced a new threat due to the Russia-Ukraine war. Could such an event show conclusively that humankind is guided by irrationality? Many analyses of the world's situation suggest a positive answer to this.

However, there are many other facts that support another way to understand this situation. Recognizing that there is still a lot of room for improvement, humankind has achieved remarkable milestones such as space travel, the discovery and understanding of natural laws, the increasing ability to change and modify nature, the application of the methods of modern science to recent and widespread technologies (such as internet and artificial intelligence) not to mention the increase in our life expectancy as well as the improvement of the conditions of habitability. All these achievements seem to suggest that we have surpassed, in an extraordinary way, human instinct and have been able to use extensively and systematically our rationality. But there are many reasons that uphold the idea that our very rationality is endangered.

Facing this worrisome situation does not have to lead to desperation. We have some tools at hand that, if employed in a resourceful way, can help us to overcome or at least to counteract the menace. And this is a pressing purpose. Popper bequeathed us Critical Rationalism, a powerful tool that could be potentially useful in education, in particular, to develop higher order abilities such as critical thinking (Giraldo & García, 2019), though its meaning and scope need some clarification. Let us start by casting some light over the locution “critical rationalism”.

We suggest that critical rationalism is the result of the rational and sincere effort to search for evidence that can overthrow our more cherished ideas and beliefs, instead of searching for supporting arguments or confirming evidence. For this reason, we think that the methodology of critical rationalism, besides implying a defense of reason puts it in its right place, since it dictates that a critical thinker is not someone who strives to protect her ideas with clever arguments and tries to persuade others about their alleged truth, as customary, but someone who evaluates the consequences of her ideas and is ready to renounce them if they do not stand the test of experience or do not resist rational criticism. To sum up, it is important to emphasize that critical rationalism focuses in the use of negative criticism; hence the warning of not confusing *necessitas consequentiae* with *necessitas consequentis*. (Miller, 2005).

If we subscribe the main tenets of critical rationalism, we soon realize that the main purpose of argument is not justificatory –unlike what is found in literature (e.g., Fisher, 1988: 16). From the point of view of critical rationalism, it is not possible to advance reasons to support, prove or demonstrate. Instead, we can rationally criticize, understanding such criticism as an activity that

does not aim to logically support conclusions but that seeks to get closer to the truth by the progressive and systematic use of what has been called a negative method. Critical rationalism is pertinent—and essential—in education since by the method of conjectures followed by refutations, we might identify error and introduce corrections to overcome what has been called *God's complex* (Harford, 2011) and humbly recognize human shortcomings, especially our fallibility.¹

2. Problem

Literature devoted to studying critical thinking and highlighting its importance for higher education is abundant (Dunne, 2015; Ennis, 1987; Facione, 1998; Paul, 2012; Siegel, 1988). There is no agreement on what critical thinking amounts to, but there are several definitions that can be traced back from ancient times to our own age. In classical Greece, Socrates and Aristotle are two main figures.² One of the most important contentions of the former says that a life unexamined is not worth living, hence the Socratic invitation: “Know thyself”, while the latter was a pioneer in the systematization of Logic as a tool for scientific research; in fact, some thinkers have defined it as the science that gives the rules and principles or valid inference.

The Middle Age has also critical thinkers: John Duns Scotus, William of Ockham and Saint Thomas Aquinas can be considered as such. The first of them held that reason should not be subjected to any censorship by authority, but, contrariwise, reason should control authority. Ockham is an example of bravery since he was harassed because of his efforts to find out whether the Papacy applied its doctrine of poverty to itself. He also considered Pope John XXII as a heresiarch. Ockham is well known for his innovative methodological principle called nowadays “the principle of parsimony”, that clearly encompasses a basic element of critical thinking: when explaining something we should recur to the fewest number of possible causes, factors or variables. Saint Thomas Aquinas developed an extraordinary argumentative technique in his *Summa Theologicae* introducing the anticipation of objections to his views, so that he could analyze and respond, in a systematic way, such objections.

In the Renaissance and the Modern times one can find several important critical thinkers. Cultural and intellectual renowned movements such as the Enlightenment, the Scientific Revolution and the Protestant Reformation were a result of their ideas. With the former, ancient Greek culture in all its guises (art, literature and philosophy) reappeared through an unprecedented influence on western thought. The Reformation of Luther and Calvin in the early 16th century broke the unity of the Catholic Church because the main motivation was the

¹ The tradition of critical rationalism, understood as the way to increase knowledge, implies that all our knowledge is provisional, conjectural and hypothetical. These ideas should not be absent from the school setting if we consider Popper's complaint: “[The student], in my view, has been taught badly. I believe, and so do many others, that all teaching on the University level (and if possible, below) should be training and encouragement in critical thinking” (Popper, 1970: 52-53).

² Plato would need a more detailed analysis since he is a defender of closed societies (as Popper shows in *The Open Society and Its Enemies*), and the idea of a critical thinker that does not contribute to the consolidation of open societies is troublesome. In contrast to Plato's view, some Pre-Socratics, among them the Ionian School, deserve special recognition for their critical attitude.

individual salvation of the soul through faith with no mediation of the ecclesiastical authority. (Stevenson & Haberman, 2004). The 17th century scientific revolution brought substantial changes since Copernican astronomy moved the Earth away from the center of the universe changing man's image of himself and of the world. The Enlightenment, which occurred in the 18th century took different paths in England and France, but gave birth to the hope that scientific method was useful to gain knowledge about the natural world, contributed to the knowledge of human nature and improved our living conditions. In short, Renaissance scholars were interested in knowing, understanding and explaining phenomena by using rational criticism. No matter how short this summary is, it would not be complete without mentioning the influence of the Cartesian philosophy. Let us recall that Descartes's *Rules for the Direction of the Mind*, albeit incomplete, contains an excellent introduction to the method of critical thinking, since they are based on the principle of hyperbolic doubt and recommend that one must question and check very item of thought.

We can find more developed and important studies on critical thinking in the 20th century as they appear in the works by Dewey (1933), *How We Think*; Ennis (1987), "A Taxonomy of Critical Thinking Dispositions and Abilities"; Fisher (1988), *The Logic of Real Arguments*; Facione (1998), *Critical Thinking: What It is and Why it Counts*; Lipman (1988), *Philosophy Goes to School*; Siegel, *Educating Reason: Rationality, Critical Thinking, and Education* (1988) and his paper "The Rationality of Science, Critical Thinking, and Science Education" (1989); Schlecht (1989), "Critical thinking courses: their value and limits"; Toulmin (2003), *The Uses of Argument*, and many other authors who can be easily located in the literature.

However, there is a salient and common characteristic in almost every source consulted: most of these scholars suggest in a rather direct way, that Socrates is a good model of what it means to be a critical thinker. This does not imply that Socratic criticism is determinant or decisive in handbooks for teaching critical thinking, since they contain very general descriptions and recommendations while claiming that the aim of argumentation is a combination of justification and persuasion, goals that entail authority and seem to favor dogmatism. For this reason, we prefer a view more entrenched in Popperian critical rationalism.

Popper's method promotes, besides critical rationalism, tolerance as well as the respect for difference. However, when one finds the hope for a better world in open societies, one has to fight with neither remorse nor tolerance against the defenders and perpetuators of closed and dogmatic societies —what amounts to an inevitable paradox¹— especially in times of confusion

¹ We must take into account the so-called *paradox of tolerance* as stated by Popper (1945): "Unlimited tolerance must lead to the disappearance of tolerance. If we extend unlimited tolerance even to those who are intolerant, if we are not prepared to defend a tolerant society against the onslaught of the intolerant, then the tolerant will be destroyed, and tolerance with them. —In this formulation, I do not imply, for instance, that we should always suppress the utterance of intolerant philosophies; as long as we can counter them by rational argument and keep them in check by public opinion, suppression would certainly be most unwise. But we should claim the *right* to suppress them, if necessary, even by force; for it may easily turn out that they are not prepared to meet us on the level of rational argument, but begin by denouncing all argument; they may forbid their followers to listen to rational argument, because it is deceptive, and teach them to answer arguments by the use of their fists or pistols. We should therefore claim, in the name of tolerance, the right not to tolerate the intolerant. We should claim that any

and obscurantism disguised as nationalism and democracy. The promoters of closed societies seem not to be ready to recognize and correct mistakes, they tend to consider themselves as infallible and eagerly offer justifications even to the unacceptable. In fact, they are so stubborn with justifying their acts and decisions that they frequently go into the terrain of comedy. Politics in Latin America (as well as in Colombia) provide plenty of examples. To mention just one, consider the Colombian's government response to the criticisms for the continuous killing of social leaders during the years following the peace agreements signed in 2016. Instead of adopting effective measures to protect the lives of the social leaders, the government has refused to acknowledge the gravity of the situation and has attempted to minimize it by calling the massacres with names like "collective killings" as if using euphemisms had any effect on the problem.

We are not disputing the idea that Socrates and his method are a good model of rational criticism. As a matter of fact, Socrates' philosophy and Socrates' attitude, as well as that of the first natural philosophers, are cornerstones of our project and we concede that what is called in the literature as "Popperian critical rationalism" has to be traced back to the pre-Socratic philosophers,¹ mainly the Ionians who characterized themselves by openly discussing their views, unlike the Pythagoreans, whose teachers devoted themselves to train a small and select group of people and to keep the Pythagorean doctrine pure and unchanged. We find an example of this in the criticisms raised by Anaximander to Thales and this suggests, according to Popper, that good teachers not only are quite tolerant with criticism but also that they stimulate it, since it is unlikely that a pupil taught within the boundaries of dogmatism would dare to criticize her teacher. If what we have learned about Hippasus of Metapontum is true, exemplifies the intolerance characteristic of some dogmatic and esoteric trends. Allegedly, he was expelled from the Pythagorean School because he discovered irrational numbers.

[...] the historical fact that the Ionian school was the first in which pupils criticized their masters, in one generation after the other. There can be little doubt that the Greek tradition of philosophical criticism had its main source in Ionia. (Popper, 1963: Chapter 5, section XI)

We subscribe to Popper's claim that trial and error, conjectures and refutations, is the only method to solve problems and apply this central element of critical rationalism to our project.² Our hypothesis is that the best way of promoting higher-order thinking abilities, including critical

movement preaching intolerance places itself outside the law and we should consider incitement to intolerance and persecution as criminal, in the same way as we should consider incitement to murder, or to kidnapping, or to the revival of the slave trade, as criminal" (Chapter 7, Note 4).

¹ Popper (1998) defends this thesis in the first essay of his book *The World of Parmenides. Essays on the Pre-Socratic Enlightenment*; specifically in section XI.

² The use of Popper's philosophy to do research in education has a long tradition that goes back to the seventies (McNamara, 1978). Though Popper did not publish any full work on education, he shared here and there his own experiences as a school teacher as well as a pupil. His opinions on this matter have become hallmarks in current literature

thinking, implies not only assuming the central principles of Popper's rationalism, but also making sure that the resources of logic and argumentation are used in the continuous process of generation and refinement of ideas, formation of views, and argued discussion. Based on a claim by García (2005), in this work we tried to test the following two theses: familiarity with basic logical tools is a necessary condition to develop critical thinking abilities in such a way that they improve the students' capabilities to make correct inferences¹; critical thinking becomes empowered when we consider seriously views that are quite different to our preferred view and when the arguers engage in argumentative discussion to test their views severely.

3. Method

A crucial question in the field of education has to do with the widely diagnosed difficulties of senior high school students to understand the actual world, make some progress in their knowledge about it, and use reasoning abilities in a functional way. A particular case emerges when considering controversial issues — such as those in the field of moral philosophy— or some other matters that are important for society. The beliefs of senior high school students barely go further than uninformed or hasty opinions,² they have serious difficulties arguing in an articulated way for their views and very often they refuse to take part in any exercise that requires from them a more fine-grained work involving the principled defense of their points of view. They seem to be afraid of error without realizing that one could learn from a clearly identified mistake. It is common to see a great deal of frustration coming from their inability to locate the sources of their confusion and errors.

This project intends to test the controversial thesis that some familiarity with the basic tools of logic can stimulate the development of argumentative and critical thinking abilities, besides enabling the students to participate in argued debates and help them to understand the fallible nature of our reason and to admit that, as beings prone to blunder, by carefully identifying errors (through criticism) and making the appropriate changes, one can make important progress towards knowledge. A specific presupposition of this project is to use a rather different approach to the task of gaining familiarity with the tools of logic. Instead of teaching them in the traditional way or asking the students to memorize the definitions required and solve exercises we tried to use an intuitive approach consisting in several discussion exercises in the classroom to stimulate argument and criticism involving some logical key concepts. To test this approach, we ran a quasi-experiment as described in the classification by Campbell and Stanley³ (1966) with two

¹ This thesis is not peculiar to Critical Rationalism. However, we think it can be assumed here without any special difficulty.

² The word "opinion" is used here in the sense intended by Pre-Socratic philosophers when they contrasted its meaning with knowledge (or *episteme*); i.e., *doxa* as synonymous of "superficial hasty view about something, not founded on reason". In the education setting we can form (and help our students to form) views that are the result of argumentative and deliberative processes, which, examined with the method of critical rationalism can be progressively refined to become the best views one can obtain. It should be clear that we are criticizing here only the type of opinion that cannot withstand critical analysis.

³ They discuss three types of experimental stages: I) pre-experiments, ii) "pure" experiments, and iii) quasi-experiments. They also define the locution "intact group" as an already-formed group (e.g., church groups, political organisations, or classrooms

intact groups of students. This means that they were neither randomly assigned to each group nor paired with each other. Instead, before the test, they had been assigned to different groups by the system of class enrolling used in the school where this work was conducted. Leaving aside this condition, we can say that our design can be extended to pre-experiments and “experiments proper”. First, because between the years 2016 and 2017, long before conducting this study, we applied some tests to assess the hypothesis that familiarity with logic would produce better levels of reasoning and because we tried to control some independent variables —the teaching and the application of basic tools of informal logic and traditional logic—, we measured the dependent variables and did the corresponding comparison between two different groups (which could be considered as experimental and control¹). In addition, we applied some instruments to collect and analyze information: a pre-test (or diagnostic test), and two post-tests (mid test and final test).

During the year 2018, we worked with two groups of tenth-graders² of the *Instituto Universitario de Caldas*. As already mentioned, we chose, randomly, a group to be the “control group” (hereafter, CG) and the other to be the “experimental group” (hereafter, EG)³. The experimental study lasted for a school year (40 weeks divided into four ten-week periods). After applying the diagnostic test in late February, we asked the students of the EG to read *Harry Stottlemier's Discovery* (Lipman, 1974), a novel that is part of the core *curriculum* of the program Philosophy for Children, aimed at developing critical, reflexive and cooperative thinking by changing the classroom into a *community of inquiry* (Lipman *et al.*, 1980). Such strategy promotes debate and takes advantage of the natural amazement and curiosity among students as well as their capacity to pose questions and think for themselves.

In the second stage the students of the EG participated in discussions on several issues after studying and considering some basic concepts of classical logic taken from *Introduction to Logic* (Copi, *et al.* 2013). We chose this textbook due to its common use with freshmen students in college and because it stimulates some abilities like analyzing, synthesizing, recognizing and producing arguments which are congenial to our overall project.

The CG covered the same material from Copi *et al.*, by the traditional methodology including studying some inferences and solving exercises. In the traditional approach, sheer memorization of definitions and rules becomes the main component of instruction. As is well known, the students are asked to memorize rules, cases and exceptions with little attention paid to conceptual comprehension.

To test our hypotheses and collect data about the students' performance during this study, we applied three instruments that included three types of questions ordered in an increasing degree of

of students) that is entirely assigned to a specific treatment. In these cases, no selection procedure is used, but the entire group is used to represent some larger population.

¹ The “experimental” group was composed of 24 students and the control group was composed of 22 students. The whole number (46 students) is the number of people that participated in this study during the whole school year.

² Unlike the US or Europe high school education in Colombia finishes in the 11th grade.

³ After finishing the quasi-experiment, we did remedial work with the CG to make sure they attained the same level of ability as their peers in the EG.

difficulty. The questions, taken from a larger pool, changed from test to test but required from the test takers the same general abilities. The first type of questions involved the theory of immediate inferences, the second type of questions involved the basic mediate inferences¹ and the third type involved both immediate and mediate inferences in addition to some basic reasoning rules of first order logic (Annex 1). The first research tool is an initial conditions test that evaluates the students' logical intuitions and their ability to make the right inferences (this test was applied in late February to both groups). The second test (applied in late May to both groups) was designed to measure the degree of progress of the students in the EG after reading the work of Lipman and engaging in argumentative discussion sessions while their peers in the CG were taught the basic concepts of logic by using the traditional approach, and the third test (applied in Late September to both groups) measures the student's degree of progress after finishing all the reading and discussion assignments with the explained differences between the CG and the EG. The results of the last test provide some information that could be interpreted as a corroboration of the positive effects of the treatment administered.

4. Results and discussion

First research tool: diagnostic test

This instrument aimed to determine and compare the initial state as well as the ability of the participants to make inferences. The bars of tendency of the results show that groups G1 and G2 are equivalent with no significant statistical differences (measured by taking into account the means and standard deviations of the test results) that could endanger the internal validity of the quasi-experiment (figure 1).²

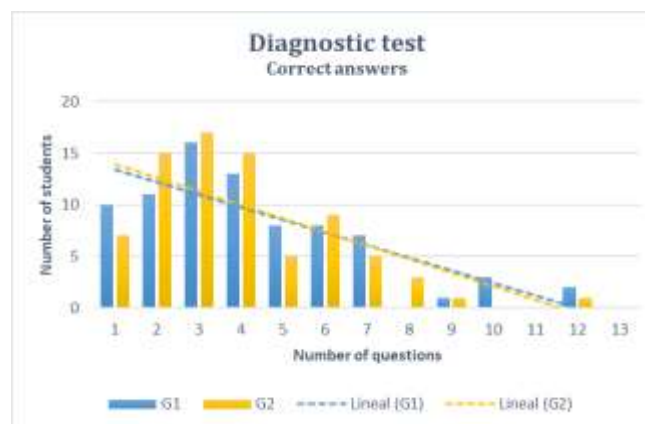


Figure 1. Correct answers in diagnostic test of G1 and G2

¹ One-premised inferences are called “immediate inferences” because there is nothing that “mediates” between the premise and the conclusion (paradigmatic examples are studied in the traditional square of opposition). Mediate inferences (like syllogisms) are two-premised inferences. It is supposed that the second (or minor) premise mediates between the first (or major) premise and the conclusion.

² Since at this moment we had not decided yet which group was to be treated as experimental and which as control, we called them by using the neutral labels G1 and G2. After the decision was made and as the study progressed G1 became the Control Group (CG) and G2 the Experimental Group (EG).

Resource: own production.

The test questions require appropriate reading comprehension to make correct inferences as well as the intuitive ability to determine the logical scope of quantifiers. At this moment, the participants are not familiarized with the basic concepts of the theory of immediate inferences; they lack the required conditions to determine the scope of the quantifiers based only in the questions' content. However, they still could answer correctly and offer acceptable reasons to support their answers if they had the appropriate logical intuitions. Obtaining correct answers can be accounted for in two ways. Firstly, the students may just have guessed the right answers yet they lack a high reading level or cannot produce satisfactory reasons. Secondly, students who are good readers and have the appropriate logic intuitions may be able to pick up the right answer and to offer acceptable reasons, which are neither formulated in a technical way nor conform to the standard definitions.

Second research tool: intermediate test

After completing the first stage of the quasi-experimental treatment, we applied the second research tool to measure the progress of the participants. In order not to affect the validity of the comparison, the design of this test was equivalent to the design of the first one. Global scores of the EG showed an indisputable improvement compared to the scores the students got in the diagnostic test and to the scores of the intermediate test of the students in the CG. Similarly, the scores of the intermediate test in the CG improved compared to the scores in the diagnostic test, but the improvement was lower than the one achieved by the EG. This suggests that having read the work by Lipman and having engaged in the discussion exercises enabled the students to improve their scores in a significant way.

In what follows, we analyze the results of the second test. We start by comparing the scores with what each group got in the diagnostic test. After doing this, we contrast the scores of each group in the intermediate test.

EG results

In figure 3, the grey bar shows the results of the first test, while the blue bar displays the results of the second test. The horizontal dotted lines allow us to present the tendencies of the correct results in both tests; while the scores in the diagnostic test fall sharply after the first question, this decrease occurs in the intermediate test after the eighth question.

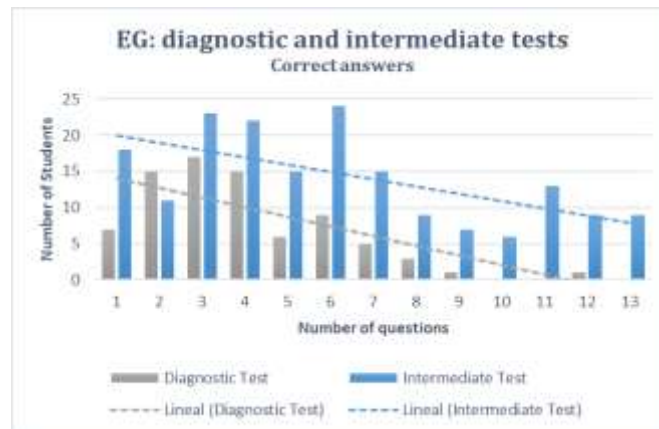


Figure 2. Correct answers in the diagnostic and intermediate test of EG

Resource: own production.

By comparing the tendency lines, we can notice that there is an important difference: the tendency of the second test is well above of the tendency of the diagnostic test. Indeed, the results of the intermediate test, except for question 2, are better. Though the students missed questions 10, 11, and 13 in the diagnostic test the situation changed completely for the second test in which we registered several correct answers for these items.

CG results

Figure 3 depicts the results of the CG for both tests. We can see that the overall results for both the CG and the EG improved compared to the diagnostic test but the scores of the EG are far better than the scores of the CG—a result that corroborates our conjecture.

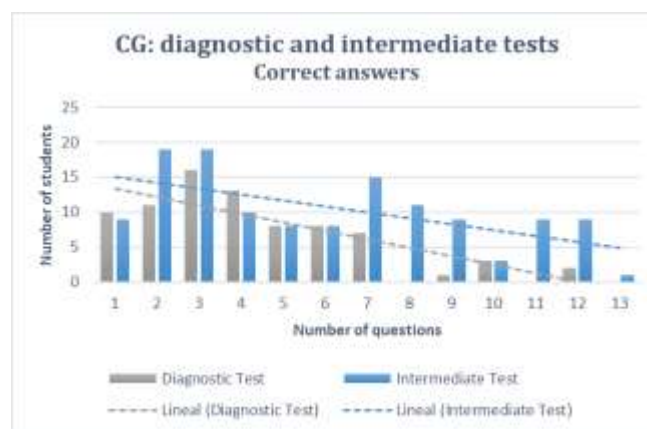


Figure 3. Correct answers of the diagnostic and intermediate test of CG

Resource: own production.

A quick look at figure 3 shows the difference between the respective tendencies of the correct answers for both groups. We can notice that the tendency line of the second test of the CG exhibits some improvement compared to the results in the first test (even though there are no

changes for questions 5, 6 and 10). However, the overall improvement (concentrated in questions 7, 8, 11 and 12) is compatible with the assumption that some familiarity with the basic definitions of logic might contribute to better higher-order thinking abilities.

EG and CG results

Since through the school year two students of the CG dropped out, we were unable to keep the number of students in both groups equal. However, this does not affect our work since in order to estimate improvement we compared the scores of each group internally. By doing so, we expect to avoid the statistical bias which can be obtained when we cannot apply the same instruments to an equal number of students.

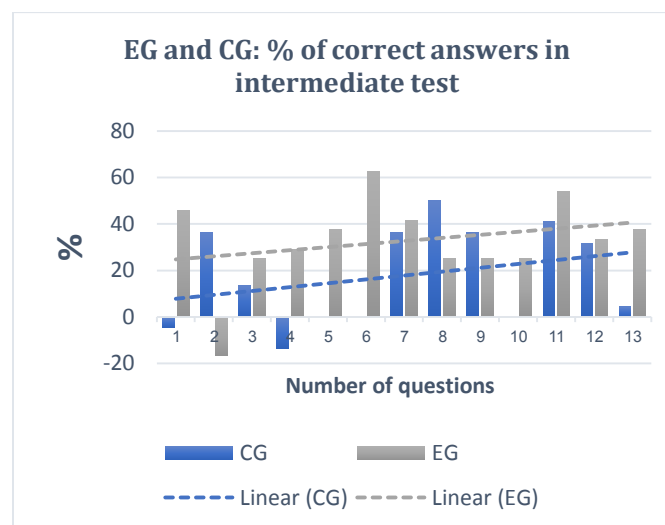


Figure 4. Percentage of correct answers of the intermediate test of CG and EG
Resource: own production.

Figure 4 shows that the results of the EG in the intermediate test were, overall, better than the scores of the CG, notwithstanding the fact the CG also improved its scores. The comparison using percentages corroborates our hypothesis in this work and illustrates that the treatment received by the EG makes a difference. Recall that the diagnostic test indicated that both groups had almost the same ability for the task so that it was appropriate to proceed with the quasi-experiment. The sharp differences indicated by the scores of each group in the second test show that there is no reason to reject our hypothesis.

Third research tool: final test

The final test, as the previous tests, was designed considering some simple logical relations like the ones exemplified in the traditional theory of immediate inferences. However, we made some adjustments to the structure of the final test by increasing the number of questions to 40 and prompting the students to produce more fine-grained reasons to justify some of their answers. Since good performance in this test also requires the ability to combine several inferences and to

support the answers with appropriate reasons it is not possible to get good scores answering randomly or by mere luck. So, familiarity with the material from the textbook and active participation in the argumentative exercises are a necessary condition for passing the test.

Figure 5 shows the results for both the EG and the CG. It is clear that the scores corroborate our conjectures since the group that received the treatment has a tendency line well above the tendency line of the control group, especially for the last group of questions that involved more complex reasoning abilities and were more difficult.

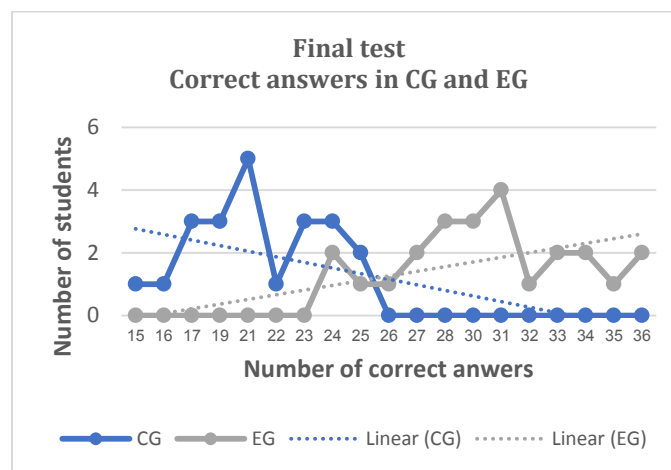


Figure 5. Correct answers of final tests of CG and EG

Resource: own production.

The test includes three types of questions. The first type requires the correct comprehension of basic concepts involved in the definitions used to make the appropriate distinctions and relations among categorical propositions and their relations, as defined in the traditional square of opposition. In this type we find questions like: if it is true that “all politicians are liars”, what can be said of “some politicians are liars”? The second type of question involves a working comprehension of quantifiers and their scope besides the correct understanding of their equivalence and the ability to detect the quantity of a statement that is expressed in a general non-quantified way, for example: if it is true that “there is no football player who is not an athlete” what can be said about “Jones, the football player, is an athlete”? The third type of question explores the use of immediate inferences and their equivalence relationships, for example, “given that all philosophers are interested in human values, can we conclude that some people interested in human values are philosophers”?

For the last type of question, we include some exercises that necessitate the right use of immediate inferences and ask the student to combine this with the abilities involved in the first two types of exercise. For these reasons, the last type of question is more complex since it involves not only immediate inferences but also the relationships that are based in the logical square of opposition as well as the scope and logical equivalence between the different quantifiers. As mentioned above, it also involves the ability to support answers by giving reasons

based on the logical relations involved; for instance: if it is true that all cats are mammals what can be said about some non-mammals are non-cats? Or: suppose that being a college professor requires someone to lecture and being a researcher enables someone to be knowledgeable about the topic he investigates about and Smith is both a college professor and a researcher, can we conclude that Smith is both a lecturer and a person knowledgeable about the topic he investigates?

5. Conclusion

In the general methodology of critical rationalism experiment has the purpose of allowing the rigorous testing of conjectures. If the tests are not withstood, one has to frame bolder conjectures to attempt to solve the problems studied. As stated before, we claim that rational negative criticism improves critical thinking, hence, allows for fighting our own cognitive biases, personal prejudices and bad reasoning patterns.

In everyday life, we do not require the abilities of good and coherent reasoners, but it is not the same when we have to debate ideas, evaluate beliefs and examine theories. This suggests that, in the educational setting, it becomes desirable to offer the students some tools that help their thinking processes, that is, apply the principle of doubt and test severely even what look like their best ideas as well as their more entrenched certainties.

If our quasi-experiment to test the mettle and pertinence of the conjectures had yielded negative results, we would have had to renounce those conjectures and to frame bolder ones to make some progress in the aim of fostering the development of higher order thinking abilities. For the time being, we can conclude that the conjectures have withstood the tests and that our suggestions to improve critical thinking and reasoning abilities with high school senior students are correct.

As suggested in the introduction, in the literature it is quite common to find a definition of critical thinking as the sheer ability to argue for a particular view. This perspective leads to some kind of verificationism since each additional piece of confirming evidence increases our confidence. However, the humble stance of critical rationalism makes us aware that we cannot hope to know that we have obtained the truth but only approach it through error elimination.

The results obtained in this quasi-experiment, though including missed questions for certain particular tests, all in all do not falsify the conjecture that some familiarity with the basic elements of logic reinforces critical thinking, and are illustrated by the fact that the students in the EG performed far better in the task of identifying valid arguments and distinguishing good arguments from defective ones. Of course, our claim states that familiarity with the basic elements of logic is a necessary but not a sufficient condition for critical thinking. Based in these results, we recommend giving special attention to the teaching of logic in high school curricula. Most public high schools in Colombia do not include logic or related subjects in their curricula. And this explains the deep breach that separates public from private schools. Some of the latter have implemented programs such as *Philosophy for Children* that might satisfy our

recommendation. As we said above, the results of our work corroborate the conclusion that students benefit from some familiarity and basic training in logical abilities, creativity and criticism.

Annex 1

The main instrument used to collect data about the student's performance is a test that required short answers and a justification of the choice. During the process of empirical testing to evaluate our conjectures we applied three research tools: a diagnostic test, an intermediate test and a final test. These tests included questions formulated in such a way that they incorporated some elements from the theory of immediate inferences, basic distinctions about categorical propositions and quantification as well as a minimum ability to translate ordinary language sentences into categorical propositions. For these reasons our discussion of the results presupposes such a theory.

To effectively use language in argument requires the capacity to establish relationships among different propositions. Now, it is customary to understand categorical propositions as affirming or negating a certain relationship that holds among sets, groups or individuals. Since this type of proposition provides the raw material for the tests, to have a satisfactory performance one needs to have some understanding or working intuitions about: i) the scope of logical quantifiers, ii) relationships of inclusion or exclusion between the sets involved by the terms of the proposition, iii) a minimum ability to translate predicative sentences from the ordinary language to their respective categorical standard propositions, and iv) the distinction between necessary and sufficient conditions.

Besides the above conditions, the third test requires some familiarity with the basic elements of the theory of immediate inferences and some inference rules from first order logic. As explained above, the questions proposed necessitate a working knowledge of those basic concepts and the student needs to have a working understanding of the equivalence between logical quantifiers, even if they are not expressed in the typical form. Lastly, the questions involve the combination of immediate inferences and their main relationships as stated by the logical square of opposition.

References

- Campbell, D. & Stanley, C. (1966). *Experimental and Quasi-Experimental Designs for Research*. Rand McNally & Company.
- Copi, I., Cohen, C. & McMahon, K. (2013). *Introduction to Logic*. Rutledge.
- Dewey, J. (1933). *How We Think: A Restatement of the Relation of Reflective Thinking to the Educative Process*. D.C. Heath & Co Publishers.
- Dunne, G. (2015). Beyond critical thinking to critical being: Criticality in higher education and life. *International Journal of Educational Research*, Vol. 71, 86–99. <https://doi.org/10.1016/j.ijer.2015.03.003>
- Ennis, R. (1987). A Taxonomy of Critical Thinking Dispositions and Abilities. In: J. Boyko & R. Stenberg (eds.), *Teaching Thinking Skills: Theory and Practice*. Freeman and Company.
- Facione, P. (1998). *Critical Thinking: What it is and Why it Counts*. California Academic Press.
- Fisher, A. (1988). *The Logic of Real Arguments*. Cambridge University Press.
- García, C. (2005). *Cinco tesis sobre el estado del desarrollo de habilidades de pensamiento crítico en instituciones de educación superior de la región*. <https://bit.ly/3wTCgTy>

- Giraldo, H. & García, C. (2019). The usefulness of critical rationalism in the theoretical and practical education field. *Revista Latinoamericana de Estudios Educativos*, 15(1), 91-110.
- Harari, Y. (2018). *21 Lessons for the 21st Century*. Spiegel & Grau.
- Harford, T. (2011). *Trial, Error, and the God Complex* [video]. YouTube. <https://bit.ly/3TC1iAE>
- Lipman, M. (1974). *Harry Stottlemier's Discovery*. Montclair State Coll.; Upper Montclair; N.J. Inst. for the Advancement of Philosophy for Children.
- Lipman, M. (1988). *Philosophy Goes to School*. Temple University Press.
- Lipman, M., Sharp, A. & Oscanyan, F. (1980). *Philosophy in the classroom*. Temple University Press.
- McNamara, D. R. (1978). Sir Karl Popper and education. *British Journal of Educational Studies*, 26(1), 24–39. <https://doi.org/10.1080/00071005.1978.9973506>
- Miller, D. (2005). Do We Reason When We Think We Reason, or Do We Think? *Learning for Democracy*, 1(3), 57-71. <https://bit.ly/3CE2kpu>
- Paul, R. (2012) *Critical Thinking: What Every Person Needs to Survive in a Rapidly Changing World*. Foundation for Critical Thinking. Revised Third Edition
- Pinker, S. (2021). *Rationality: What It Is, Why It Seems Scarce, Why It Matters?* Viking.
- Popper, K. (1945). *The Open Society and Its Enemies*. Rutledge & Kegan Paul. 5th edition 1966.
- Popper, K. (1963). *Conjectures and Refutations. The Growth of Scientific Knowledge*. Rutledge & Kegan Paul.
- Popper, K. (1970). Normal science and its dangers. In I. Lakatos & A. Musgrave (eds.), *Criticism and the Growth of Knowledge* (pp. 51-58). Cambridge University Press.
- Popper, K. (1998). *The World of Parmenides. Essays on the Pre-Socratic Enlightenment*. Rutledge.
- Schlecht, L. (1989). Critical thinking courses: their value and limits. *Teaching philosophy*, 12(2), 131-140.
- Siegel, H. (1988). *Educating Reason: Rationality, Critical Thinking, and Education*. Rutledge.
- Siegel, H. (1989). The Rationality of Science, Critical Thinking, and Science Education. *Synthese*, 80(1), 9-41.
- Stevenson L. & Haberman, D. (2004). *Ten Theories of Human Nature*. Oxford University Press.
- Toulmin, S. (2003). *The Uses of Argument*. Cambridge University Press.

Some Setbacks in the Reception of Popper in Japan

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ABSTRACT

The reception of Popper in Japan has not been a glorious history up to the present day. There have been numerous misunderstandings and distortions. It is important to record and discuss them in order to learn from them and to make use of his ideas in the Japanese intellectual climate. This is the purpose of the present paper. From the perspective of the reception history, we searched the reasons why Popper has been misunderstood in Japan (especially in four areas: philosophy, economics, history, and political philosophy), and tried to identify some of the factors responsible for this misunderstanding. To this end, we applied the method of “situational analysis” to the Japanese peculiar intellectual situation after the so-called *après guerres*, rather than by using a chronological order. If the causes of misunderstandings and distortions in Japan can be clarified by means of a situational analysis, we can learn a great deal from this history and can use this knowledge to throw new light on the status of critical rationalism in Japan.

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Introduction

Karl Popper's philosophy was introduced to Japan almost simultaneously with Japan's defeat in World War II. Since then, it has exerted a lasting influence on Japanese thought and practical politics. Except for the chaotic period immediately after the defeat, there has been a continuous activity of Japanese researchers in discussing and translating Popperian philosophy, and by now, most of his major works have been translated into Japanese. Furthermore, in 1989, the Japan Popper Society was established with Junichi Aomi as president. Since then, it has held yearly conferences and published a journal twice a year. So, we can say that Popper's philosophy has been continuously digested and studied in Japan.

Such a breeding ground, as it were, produced large numbers of articles and illuminative books concerning critical rationalism. Among them, we may count a book written by Makoto Kogawara, one of the authors of this article.¹ It is one of few introductory books aimed at the general public; it presents an overview of Popper's philosophy. Also in 2000, Kogawara edited and published *Critique and Challenge (Hihan to chousen)*,² a book of criticisms and challenges against various misconceptions and distortions of the Popperian philosophy. This book forms the basis of this article. In the same year, Yasuyuki Kageyama published an excellent study of Popper's philosophy of science concerning Popper's views on metaphysics, non-justificationism, World 3, indeterminism, and so forth.³ In 2001 and 2002, the Japan Popper Society published *Critical Rationalism (Hihanteki gouri shugi)*⁴ in two volumes. In 2010, Kogawara published *Falsificationism (Hanshou shugi)*,⁵ which comprehensively discusses various issues related to falsificationism. Guided by Popper's arguments, it provides some powerful rejoinders to essentialism and instrumentalism.

Despite the accumulation of such research, the history of the reception of Popper in Japan has not been a glorious one up to the present day. Rather, there have been numerous misunderstandings and distortions with regard to Popper's ideas. It is important to record and discuss them in order to learn from Popper and make use of his ideas in the Japanese intellectual climate. This is the purpose of this paper. However, we are not interested in describing the reception history in chronological order. The purpose of this paper is to explore why Popper has been misunderstood in Japan, and to dig out the causes behind numerous misunderstandings and various circumstances that gave rise to it. Therefore, it would be more appropriate to make use of the "situational analysis" or the "logic of the situation" as a method of describing history proposed by Popper, rather than chronological writing. If the causes of misunderstandings and distortions in Japan can be clarified through the

¹ Kogawara, M., *Popper: Critical Rationalism (Popper: Hihanteki gouri shugi)*, Kodansha, 1997.

² Kogawara, M., ed., *Critique and Challenge (Hihan to chousen)*, Miraisha, 2000.

³ Kageyama, Y., *The Thought of Critical Rationalism (Hihanteki gouri shugi no sisou)*, Miraisha, 2000.

⁴ Japan Popper Society ed., *Critical Rationalism (Hihanteki gouri shugi)*, Miraisha, first volume 2001, second volume 2002.

⁵ Kogawara, M., *Falsificationism (Hanshou shugi)*, Tohoku University Press, 2010.

application of situational analysis, we can learn a great deal from the history of reception of his ideas.

Since Popper has been discussed variously and extensively in Japan, albeit mostly in misguided manners, it would be better at first to take up the misidentification of the criterion of demarcation with the criterion of significance (or meaningfulness). This we will try to do in section 1. In section 2 we will discuss the assertions of the economist Takamitsu Sawa, who criticized Popper's criterion of demarcation, regrettably based on his miscomprehension. In section 3 we will discuss how Popper's "logic of describing history" had affected the Japanese debate concerning the relationships between Weber and Marx. In section 4 we will examine how Masao Maruyama, one of the most prominent historians of political thought in Japan, received Popper's political and social philosophy. Thus, this paper may be considered as a confrontation with the misunderstandings of Popper in Japan.

1. Criterion of significance or demarcation?

Kogawara, editor of *Criticism and Challenge (Hihan to chousen)*, has suggested that the first book introducing Popper into Japan was an anthology of translated papers, *Vienna Circle: Scientific Logic (Vienna gakudan: Kagaku ronrigaku)*, edited by Katsumi Nakamura et al., Nisshinshoin, November 1944. This book contains the translation of chapters 1 and 2 of Popper's main work, *Logik der Forschung*. However, in this book, Popper is considered as a member of the Vienna Circle. This may have been one of the reasons why Popper was misunderstood as a logical positivist in Japan. Nevertheless, in the *Preface* of this book, Popper is introduced as follows.

After having described the purely formal aspects and theoretical branches of scientific logic, Popper's "Introduction to Methodological Logic" tries to explain the methodological application of logic to the various sciences. (*op. cit.*: 1)

It is clear that Popper was introduced as a logician who tried to apply logic to the field of methodology. After having briefly explained the criterion of falsifiability, the translator adds the following comments on Popper's assertion.

We may say about Popper that he had analyzed in detail and classified the arguments concerning the problems of induction and requirements of certainty, and with clarity, pointed out the logical weak points of each of them, and presented a new viewpoint. Therefore, we may say that this is, up to now, the clearest and most original presentation of what has been argued about scientific methodology and problems of truth, and it shows the new direction of studies. (*op. cit.* 314)

These comments clearly show that Popper was at first introduced to Japan as a highly regarded philosopher of scientific methodology. However, when logical positivism and analytic philosophy came to be discussed in Japan, Popper was, in most cases strangely enough, regarded not as a

philosopher who proposed the criterion of demarcation between science and non-science, but as a philosopher who discussed the criterion of meaningfulness of statements. His reputation was also devalued. This situation reflects the problem that the overwhelming majority of researchers misunderstood the criterion of demarcation as a criterion of meaningfulness. One of the individuals who should be held responsible for this is Shozo Omori, who studied in the U.S. immediately after World War II and later taught at the University of Tokyo, one of the most prominent universities in Japan. In 1953, he said the following.

Popper also proposed that a proposition is meaningful if its negation is confirmable (i.e., falsifiability).¹

Needless to say, Omori's formulation of Popper's criterion is evidently mistaken. And yet he wrongly asserted that this version of the criterion was what Popper originally meant. Omori identified Popper's criterion of demarcation as a criterion of meaningfulness, and this mistake has been repeated in the history of studies of logical positivism in Japan. Furthermore, in 1961, a Marxist philosopher, Hidekichi Nakamura, made a similar mistake and wrongly criticized Popper.² This situation shows that the proper understanding of the criterion of demarcation disappeared after the chaotic post-war period in Japan.

A reason for this misguided reception of Popper seems to be due to the big influence of Ayer's book. The Japanese translation of his book *Language, Truth, and Logic*,³ was published in 1955. This book seems to have had the following negative effects on Japanese researchers. (1) Disregard of the fact that Popper's criterion of falsifiability is directed not to individual sentences but to systems of science. (2) Complete neglect of the fact that Popper himself clearly had recognized that existential statements are not disprovable, and on this recognition, he built up his own falsificationism. (3) Erroneous comprehension of the fact that Popper is not talking about a complete disproof of a theory. (4) Disregard of the fact that the problem is not to exclude metaphysics but to draw the appropriate demarcation line between the empirical sciences and non-empirical doctrines. (5) All this was added to the mistake of equating the criterion of demarcation with the criterion of meaningfulness.

Japanese scholars and researchers—we will refrain from citing examples here for the sake of brevity⁴—accepted Ayer's false theses without critical examination. Adding to this fact, we must point out that Popper's main work, *Logik der Forschung*,⁵ had not yet been translated into English

¹ Omori, S., "Logical Positivism (Ronri jisshou shugi)," in *Philosophical Magazine (Tetsugaku zasshi)*, vol. 68 (1953), no. 718: 75.

² Nakamura, H., *Logical Positivism and Marxism (Ronri jisshou shugi to Marx shugi)*, Aoki Shoten, 1961: 20 ff.

³ Ayer, A.J., *Language, Truth, and Logic*, London: Gollancz, (2nd. edition), 1946.

⁴ Kogawara, M., "Distortions in the History of receiving Popper (Popper juyoushi ni mirareru yugami ni tsuite)" contained in *Critique and Challenge (Hihan to chousen)*, provides a detailed explanation of this point.

⁵ This book was translated into English as *The Logic of Scientific Discovery* in 1959. Japanese translation was published in 1971-1972.

at this time. The German language of this book made a close reading difficult, so that many researchers did not make any effort to study it.

We should here mention another inconvenient background peculiar to the war-and-afterwar time. After the defeat in World War II, cultures of the victorious nations, especially of the United States, flowed into Japan in torrents. It is good to remember the fact that during the 1930s, logical positivists from Vienna and other parts of Europe sought asylum in the United States. Among them, Carnap and Reichenbach were particularly famous. However, they were also persistent critics of Popper. Carnap taught at the University of Chicago (1936-1952) and the University of California (1954-1961), and as is well known, his teaching, combined with the popularity of American pragmatism at the time, was highly influential. Reichenbach, the founder of the Berlin Circle, also immigrated to the United States just before World War II and took a teaching position at the University of California, Los Angeles, where he trained Hillary Putnam and Wesley C. Salmon. Compared to these facts, Popper did not stand in a good position. He was far removed from the center of civilization, and had been left in New Zealand, where he had been absorbed in writing his magnum opus: *The Open Society and Its Enemies*, and did not have a chance to exert his influence over the young and talented students.

Thus, the distorted image of Popper, and the American culture in general, prevailed over the defeated Japan. Under these conditions, it took a long time for the following sober judgement of Passmore¹ to take root in Japan.

In fact, however, Popper was convinced that “the problem of meaning” is no real importance; the positivist attempts to find a “criterion of significance,” he thought, led to no positive results, but only to the setting up of quite arbitrary stipulations. Refutability, as he conceived it, is not a criterion of meaning but a method of distinguishing between science and its simulacra.

The fallacy of confusing the criterion of meaningfulness with the criterion of demarcation was not eradicated until at least the late 1990s. It would be tedious to give specific examples and discuss them in detail. Suffice it here only to mention some of the scholars who have committed this fallacy and their books in which this mistake appears.

1. Jiro Watanabe, *An Introduction to Anglo-American Philosophy (Eibei tetsugaku nyumon)*, Chikuma Gakugei Bunko, 1996. The original version of this book was entitled *Modern Philosophy*, (Foundation for the Promotion of the Open University of Japan, 1991).

2. Yasuhiko Tomita, *A Philosopher of Science: The Busy Summer of Tatsuhiko Kashiwagi (Kagaku tetsugakusha, Kashiwagi Tatsuhiko no tabouna natsu)*, (Nakanishiya Shuppan, 1997).

3. Jiichiro Takeo, *the Development of Analytic Philosophy (Bunseki tetsugaku no hatten)* (Hosei University Press, 1997).

¹ Passmore, J, *A Hundred Years of Philosophy*, Penguin Books, (2nd edition, 1966: 407). The first edition was published in 1957, but the authors have not yet seen it.

4. Kiyohiko Ikeda, *The Adventures of Structuralist Theory of Science (Kouzou syugi kagaku ron no bouken)* (Kodansha Gakujutsu Bunko, 1998; originally published by Mainichi Shinbunsha, 1990).

5. Keiichi Noe, *Kuhn*, Kodansha, 1998.

These examples clearly indicate that there were some major obstacles to the understanding of Popper properly. Of course, in haste, we must add that these books did not exclusively treat the problem of meaningfulness. There were other factors that prevented an appropriate understanding of Popper.

However, before treating them, it would be better here to say some words with regard to logical positivists' misunderstandings of Popper. Concerning the sentences of sciences, we could say that for logical positivists to be scientific means to be meaningful, and to be meaningful means to be empirical, and finally to be empirical is explicated by Popper's criterion of falsifiability. They would readily admit that on this point Popper indeed made a good contribution. It follows from the above that for them the following is a valid equation "scientific = meaningful = falsifiable". But at the same time, it is also clear that existential statements are not falsifiable. However, we cannot deny that they have some kind of meaningfulness. Therefore, many logical positivists thought that they should exclude the criterion of falsifiability and Popper's criterion of demarcation, because, they thought, they did not address their problem. Their concern was to protect the part of the equation which was dealing with the notion of meaning, i.e. "scientific = meaningful." As a result, it became difficult for them to understand the challenging importance of the criterion of demarcation for the philosophy of science. They had forgotten that their so-called meaningless (non-empirical) sentences (metaphysics or non-science) have in many cases seminal power to the development of science. It is rather harmful to exclude non-empirical sentences without consideration. However, positivists could not understand this important point.

In addition to this, it should be remarked that the wrong influence of positivism disturbed the proper understanding of Popper. A piece of evidence for this can be found in Noe's book referred to above. He wrote the following.

"Neutral language" is a language that purely describes observational facts, as the sense-data language and object language do. Logical positivism relies on these languages. Popper also admits the existence of such "basic statements" as the basis for the theory of refutation. In this respect, Popper inherits the "theory-observation dichotomy" from logical positivism.¹

This is indeed an astonishing distortion. Apparently, Noe knows nothing about "basic statements" in Popper's sense. Popper did not overlook the theory-ladenness of observation; rather,

¹ Keiichi Noe, *Kuhn*, Kodansha, 1998, p. 232.

he himself had pointed it out.¹ Minoru Akima, who is a Marxist scholar, approved this point in 1974.²

Why, then, had such a distortion, or rather fallacy, prevailed for so long after the war, until well into the 1990s? One reply is that there were not many counterarguments from the Popperian side. However, this reply is not sufficient to fully explain the fallacy. To find a better explanation, we have to take into consideration the worldwide constellation of thought in the postwar period. Kogawara has proposed a hypothesis which can shed some light on the situation. His hypothesis is as follows.³

For some time after the war—and, this seems to be true mainly for the West—there were, to put things very roughly, three main trends in philosophy. These were existentialism (and German idealism as pulpit philosophy), Marxism, and logical positivism (including analytic and scientific philosophy). They were engaged in a struggle with each other in the West and also in Japan. In this situation, Popper's critical rationalism, as clearly had been shown in his *Open Society and Its Enemies*, was thoroughly critical of all these trends. Popper was critical of philosophers such as Heidegger, Jaspers, and continental philosophers including Hegel. Furthermore, Popper criticized many important aspects of Marxism, including its unscientific prophecy of the inevitable collapse of capitalism, and its dialectics. In addition, Popper was critical of the views of logical positivists, as was shown, for example, in the 17th chapter of his *Unended Quest*: “Who killed logical positivism?”, and in many of his comments concerning Carnap, Wittgenstein and other positivists in *The Open Society and Its Enemies*. In a word, Popper was surrounded by enemies from all sides.

In this context, Popper had been continuously misrepresented as a “logical positivist,” although somewhat a “heretical” one. Why was this? The answer seems to be that under these circumstances, it was more convenient and useful for all parties opposing him.

First, existentialists and idealists had no sufficient understanding of the problematic of logical positivism. They had shown no interest in taking science into consideration, and if Popper was a logical positivist, he was no more than the empiricists who had appeared in the history of philosophy, i.e., no more than Berkeley, a mere phenomenalist who knew nothing of the real world beyond perceptual representations, and therefore not worthy of mentioning. By creating such incredible fiction, they were able to ignore Popper's philosophy.

Second, many Marxists saw logical positivism as nothing more than an ideology that neither knew the real nature of capitalist society nor intended to fight against it. For Marxists, in general, positivism was an ideology that protects and justifies the existing order (status quo) against attacks from oppressed people. We believe that Cornforth's *Open Philosophy and the Open Society: A Reply to Dr. Karl Popper's Refutations of Marxism*, published in England in 1968 and translated

¹ Popper, K.R., *The Logic of Scientific Discovery*, section 19.

² Minoru Akima, *The World of Theories of Sciences (Kagakuron no sekai)*, Ootsuki Shoten, 1974: 334.

³ Kogawara, M., “Distortions in the History of Receiving Popper (Popper juyoushi ni mirareru yugami ni tsuite),” in *Critique and Challenge (Hihan to chousen)*, Miraisha, 2000.

into Japanese in 1972, shows this tendency.¹ Also, the members of the Frankfurt School, which emerged in the 1960s as neo-Marxism, were under the influence of Marxists' traditional comprehension of positivism.

It is a well-known fact that there was the so-called positivist dispute (*Der Positivismusstreit in der deutschen Soziologie*) in Germany in the 1960s.² This dispute was regrettably not fertile. The members of the Frankfurt School failed to accurately grasp the kernel of falsificationism because they were strongly influenced by the logical positivistic version of positivism and their own historical comprehension of positivism à la Marxism. Max Horkheimer and Theodor Adorno, two leaders of this School, show a very poor understanding of epistemological problems under the influence of Marxist tradition. We think that they could not understand Popper's criticism of dialectics. Under such situations, it is clear that their prior miscomprehension of positivism informed their distorted understanding of Popper's falsificationism, never vice versa. They exploited a prevailing distorted image produced by the cliché of "Popper is a positivist". But as a result of this exploitation, they fell victim to their own misattribution of positivism to Popper.

Third, since the logical positivists, with the exception of Otto Neurath in the early period, did not have a social philosophy comparable to Popper's *Open Society and Its Enemies*, Popper's criticism of Marxism was an important and sharp weapon for them to fight against other philosophical tendencies, especially against Marxism. Even if they could not agree with Popper's philosophy of science, they could not help but admit the advantage of holding Popper's political position in order to fight against Marxism. It was convenient for them to lock Popper into the framework of a mere social philosopher and to keep him within the group of philosophers of meaning instead of taking up his philosophy of science seriously.

In Japan, Kuhn's *Structure of Scientific Revolutions*, an internationally famous book, which treats the history of science with the linkage of logical positivism and sociological analyses, was translated into Japanese in 1971 and brought about the "paradigm controversy". However, this controversy consisted mainly of importing foreign articles and books to Japan. They came mainly from the U.S., reminding us of the strong influence of the American philosophy of science. In this context, Keiichi Noe argued for Kuhn. But his arguments, as Yoshihisa Hagiwara has pointed out,³ were full of fallacies and we have already pointed out his error about Popper's basic statements. In Japan, however, the substance of this controversy was not digested, and the mass media utilized the term "paradigm shift" as a buzzword and used it as a promotional term to sell their innovations. It gradually lost its academic character. The Japanese translation of *The Structure of Scientific*

¹ Popper gave no heed to Cornforth. Japanese Marxist philosophers did not seem to make a serious effort to understand Popper's social philosophy as part of their own responsibility.

² Kogawara has already published two articles on the positivist dispute. He has also mentioned it in his book: *Popper: Critical Rationalism (Popper: Hihanteki gouri shugi)*. In the present paper, and due to space limitation, he has refrained from repeating his arguments in his book.

³ Hagiwara, Y., "Karl Popper's Political Philosophy? (Karl Popper no seiji tetsugaku?)" in *Critical Rationalism (Hihanteki gouri shugi)*, second volume, Miraisha, 2002: 175 f. Kogawara's *Falsificationism (Hanshou shugi)* deals with the so-called paradigm controversy and thoroughly criticizes Keiichi Noe's interpretations of this controversy.

Revolutions, an object of many discussions, contained a lot of defective interpretations and many misconceptions. This shows one aspect of the scholarship in Japan. Instead of measured and cool-headed debates, fashions ruled. In the meantime, and as a result of changes in intellectual fads, Popper's views fell out of favour and he was turned into a forgotten philosopher of the past, not least because of his intellectual modesty.

These circumstances led to a rather unfortunate situation: Popper's critique of logical positivism in general and also of Popper's criticism of Wittgenstein in the notes of *The Open Society and Its Enemies* remained almost totally unappreciated. According to Popper, philosophy was not a cure for the misuse of language, but rather a cosmology in the sense of an understanding of the world, including ourselves. Popper was a critical rationalist both in name and reality. However, if we admit the fiction that Popper himself was a logical positivist and that logical positivism had already gone away, then Popper's antagonists, namely, existentialists and idealists, Marxist philosophers, and logical positivists and analytic philosophers could, without feeling the reproach of conscience, ignore Popper's philosophy.

Now we have mentioned many regrettable errors in receiving Popper. Unfortunately, similar errors were also committed, in the context of Japanese thought, in disciplines such as economics, the history of political thought and others like them. In what follows, we examine some examples of the misconception of Popper's views in these disciplines.

2. Can economic theories be falsifiable? (Takamitsu Sawa)

Popper's criterion of demarcation is fairly well known among Japanese economists, and whether they accept it or not, its impact has been considerable. In this section, we discuss the views of Takamitsu Sawa, as a representative economist who is skeptical of Popper's criterion of demarcation. Before entering into a discussion of Sawa's views, it would be useful to explain the intellectual orientations of Japanese economists prior to the introduction of Popper's criterion of demarcation.

Traditionally in Japan, many economists were used to drawing a line between Marxian economics and other disciplines such as neoclassical economics and Keynesian economics, and the latter two were usually lumped together and labelled "modern economics (kindai keizaigaku, in Japanese)". This is an academic tradition peculiar to Japan and seems to be a unique and a rather strange phenomenon from an international perspective.¹ It is in the context of this special tradition that the criterion of demarcation should be understood. This tradition has emphasized the scientific nature of "modern economics" and despised Marxian economics. This was largely due to the unique academic situation in Japan after World War II.

At that time, Marxian economics, on the whole, declined in the West, while American economics expanded its territory and established itself as a policy science. In postwar Japan, GHQ

¹ Hayasaka, T., "What is 'Modern Economics'?" ('Kindai keizaigaku' toha nani ka) in Inada, K., Okamoto, T. and Hayasaka, T., eds., *Modern Economics Reconsidered (Kindai keizaigaku saikou)*, Yuhikaku, 1974.

(General Headquarters, the Supreme Commander for the Allied Powers), guaranteed free speech for the purpose of democratization of Japan and tacitly encouraged the inevitable rise and expansion of socialist and labour movements. Through these policies, Marxism regained political power after the suppression imposed by Japanese militarism during the war period. On the other hand, academicians warmly welcomed non-Marxian economics, such as neoclassical economics and Keynesian economics. This situation inevitably generated two paradigms that were theoretically and methodologically incompatible and conflicted with each other.¹

Needless to say, “modern economics” made great contributions to the development of large-scale econometric analyses and tried actively to utilize them in policy making and to build a legitimate empirical science.² Given this, it was natural for researchers to stand on the side of “modern economics,” and to make the following comments.³

The most basic criticism of Marxian economics, even from the standpoint of modern science, is that it is neither an empirical science nor based on the scientific method.

Marxian economics is, in our opinion, a grand system of thought ... the core of which contains many elements that are alien to science, such as philosophy, philosophy of history, views of the world, ideologies, and so on. Philosophies and views of the world encourage people and give them guidelines for actions to take, and Marxian economics in fact plays such a role, but science, in the strict sense of the word, is not like that.

With regard to this demarcation problem, it was Popper’s criterion, especially via Samuelson, that exerted the strongest influence on modern economists. In his book *Foundations of Economic Analysis* (1947), Samuelson was one of the first who had mentioned Popper’s falsifiability. However, Samuelson incorrectly states that “By a meaningful theorem, I mean simply a hypothesis about empirical data which could conceivably be refuted, if only under ideal conditions.”⁴ It is clear that he does not accurately understand the difference between falsificationism and logical positivism.

Samuelson’s misunderstanding was very unfortunate for the reception of Popper. For it created a situation in which the familiar misunderstanding was repeated in economics. The statements of prominent figures like Samuelson were influential, for better or worse. Almost none of the Japanese

¹ Fukasawa, T., *The Conflict of Two Economics and Guidelines for Studying Economics: Marxian Economics and ‘Marginal Revolution’ II* (Futatsu no keizaigaku no soukoku to keizaigaku gakusyuu no shisin: Marx keizaigaku to ‘genkai kakumei’ II), *University Reform and Lifelong Learning: Bulletin of Yamanashi Gakuin Lifelong Learning Center Daigaku kaikaku to shougai gakusyuu*, 2017: 47 ff.

² Murakami, Y., “Possibilities and Limitations of Modern Economics (Kindai keizaigaku no kanousei to genkai),” *Chuo Koron*, 1971: 57 ff.

³ Imai, K., Uzawa, H, Komiya, R., Negishi, T., and Murakami, Y., *Price Theory I (Kakaku riron I)*, Iwanami Shoten, 1971: 29. The next quotation is from p. 30.

⁴ Samuelson, P. A., *Foundations of Economic Analysis*, Cambridge: Harvard University Press, 1947: 4.

researchers gave careful consideration to his misunderstanding. As a result, Japanese economists received Popper's views according to Samuelson's reading of him. We can find such traces in a series of publications by Takamitsu Sawa in the 1980s.¹

However, strictly speaking, Samuelson and Sawa have very different views concerning the criterion of demarcation. Sawa is very skeptical about the feasibility of Popper's criterion, while Samuelson defends it. Importantly, both the advocate and opponent of Popper's criterion are equally guilty of misinterpreting it. Since this point is somewhat complicated, we will examine Sawa's argument in more detail.

Sawa is a talented econometrician. Since the time he was a young academic until now, he has acquired outstanding academic achievements to the extent that we can now call him a famous member of the mainstream of "modern economics (kindai keizaigaku)." But, in a series of essays in the early 1980s, he frequently challenged the scientific character of the practice based on falsificationism as the methodological norm of "modern economics (kindai keizaigaku)", as follows.²

Although neoclassical economists, in general, use Popper's falsificationism as a shield in identifying their own work as "scientific" and disparaging Marxian economics and other schools of economics as unscientific, they have to give negative answers to the questions whether they have truly practised falsificationism in the history of their teachings and academic endeavours..... If this is the case, is it merely an illusion or delusion that neoclassical economics is qualified as a science having "falsifiability"?³

It is not difficult to guess the background of his attitude. Perhaps he was strongly influenced by the alleged new philosophy of science and the ideas of paradigm or scientific programmes of Kuhn and Lakatos. Based on these alternative views, Sawa was deeply skeptical of the feasibility or applicability of the criterion of falsifiability.

However, as we will see below, Sawa misunderstood this criterion in exactly the same way as Samuelson did. On the basis of this erroneous understanding, he criticized falsificationism as well as neoclassical economics that uses it as norms or rules of science. Let us consider some of the passages where Sawa seems to have misunderstood falsificationism.

The "economy" drawn by neoclassical economists is so structured that one can mathematically formulate their own assertions, and as a result of these manipulations, the rest of their assertions are able to be inferred in no other way than in a deductive way. This means that the conclusions are "true" without any

¹ For Sawa, See the following detailed study. Sato, M., "What was *Keizaigaku to wa Nan Daro ka* [What is Economics]?," *The Economic Review of Kansai University Keizai ronsyuu*, 2022: 57-79.

² Sawa, T., *What is Economics? (Keizaigaku toha nan darou ka)*, Iwanami Shoten, 1982.

³ Sawa, T., *Fiction and Reality (Kyokou to Genjitsu)*, Shinyosha, 1984: 103 f.

complaints. But these consequences deduced from the presuppositions seem to be not falsifiable (at least in practice, although thought experiments make them falsifiable). In this sense, one must make here an additional comment that it is highly doubtful whether the theorems are really “meaningful” scientific propositions in the sense of Popper’s falsificationism.¹

While Sawa’s question of whether neoclassical economics qualifies as science is very important, it does not seem that he understood Popper’s demarcation-criterion correctly. This is because he made a blatant mistake of confusing the demarcation-criterion with the meaningfulness-criterion. In his next quotation, the confusion is expressed in a clearer way.

In so far as one stands on falsificationism or logical positivism, as Friedman says, it would be meaningless to discuss the practical [empirical] validity of the hypotheses (laws), i.e., presuppositions of the argumentation. What constitutes the basis of the meaningfulness of a theory is the falsifiability or verifiability as consequences of the deductions or predictions.²

This quotation, published in 1986, clearly shows that he has failed to properly understand even the most basic teaching of falsificationism. Only the reading of the first chapter of *The Logic of Scientific Discovery* would have swept away this kind of misunderstanding. To be meaningful does not have any connections with being empirical. Incidentally, *The Logic of Scientific Discovery* had already been translated into Japanese and published in 1971 (first volume) and 1972 (second volume), as was pointed out in section 1. Unlike Samuelson, Sawa could have access to this book in his native language. It is very regrettable that he omitted careful reading of this book.

There is one more point to be taken into examination. Sawa asserts that neoclassical economics, even in its ordinary practices, employs ad hoc “manoeuvres to evade refutations” and therefore falsificationism does not work as the norm of scientific activities.³ Even if inconvenient data are found in empirical studies, it is usual to treat them as flaws in collecting data or presenting auxiliary hypotheses (Lakatos’s “protecting belt [bougyotai, in Japanese]”) and to introduce ad hoc manoeuvres in order to keep the theory itself unscathed. Therefore, Sawa, under the influence of Lakatos, claimed that “the neoclassical scientific research program ... has so far suffered no decisive ‘disproof’ (to change its ‘hard core’) and is expected to survive and thrive in years to come.”⁴

What confronts us here is the alleged paradigm theory that was very influential in Japan at this time. Sawa argues that the driving force of the paradigm change is the “context of the times” and also the “context of the societies.” He pointed that the shift “from Marx to Keynes” corresponds to

¹ Sawa, T., *What is Economics? (Keizaigaku toha nan darou ka)*, Iwanami Shoten, 1982: 59 f.

² Sawa, T., “Dreams and Abstinence (Yume to Kinyoku),” Asada, A., Kuroda, S., Sawa, T., Nagano, K., and Yamaguchi, M., *What is Scientific Method? (Kagakuteki houhou toha nanika)*, Chuokoronsha, 1986: 79.

³ Sawa, T., *Fiction and Reality (Kyokou to Genjitsu)*, 1984, Shinyosha: 109.

⁴ *Ibidem*, 106.

the change in the social context that the rise and fall of the New Left movement triggered. According to Sawa, the shift “from Keynes to neoclassical economics” reflects the economic upheavals of the developed countries in the 1970s, where we can find the end of the high-growth period caused by the oil shocks, the consequent expansions of financial deficits and curtailing the “overgrown governments.”¹ In other words, Sawa supposes that the “social usefulness” of a theory, that is, the ability to respond quickly to the changes in conditions and demands of society, strongly affects our choice of theory. In this respect, he seems to be fallen into the postmodernist and contextual relativist way of thinking.

We should not overlook the hard fact that Sawa’s argument does not necessarily represent the views of all other economists. For example, Masao Fukuoka, a famous theoretical economist and avowed falsificationist, has expressed the following complaints against Sawa.

I am extremely uncertain about [what Sawa says], although the context of the periods or the quotidian knowledge yields change, it is very difficult to say that they are greatly independent of people’s experiences or experienced refutations through facts. Is it not true that what shook the authority of Keynesian economics in the 1970s was, above all, the fact that the trade-off relationship between unemployment and inflation disappeared because of supply shocks, and also the Phillips curve shifted upward? In this respect, I would like to prefer Blaug’s view that the 1970s provided Popperism with good illustrations. I do not want Sawa to make irresponsible statements that “the gradual ‘progress’ of theory through the accumulation of refutations is an unfulfilled wish.”¹

We think that Fukuoka’s comments are right, and would like to raise a question concerning Sawa’s conception of usefulness depending on the context of the times and society. Isn’t it true that the utility of a theory depends on its ability to successfully explain or predict various kinds of economic phenomena? Isn’t it also true that the usefulness of a theory is supported, after all, by the fact that the theory has passed through rigorous empirical tests? Isn’t it true that these facts explain that the usefulness of a theory depends on empirical tests, not on the context of the days and societies? It will become Sawa’s task to explain how these contexts occur, not by using an unclear and vague rationale in selecting theories.

3. Had Popper ignored historicity? (Terushiro Sera)

Having discussed the applicability of falsifiability to economics as a theoretical science in the previous section, we now turn to history or description of it, particularly Weberian studies in Japan. In Japan, due to the strong influence of Marxism, the relationship between Marx and Weber has been a major issue. This is a problem of how history should be interpreted and has often been

¹ Sawa, T., *The Road to Economics: The Gutenberg Forest (Keizaigaku eno michi)*, Iwanami Shoten, 2003: 120.

¹ Fukuoka, M., “The Anti-Popperian Pitfall (Han-Popper syugi no kansei),” in *Economics and I (Keizaigaku to watashi)*, Sobunsha, 1994: 443.

discussed as a question of “Weber or Marx” or “Marx as well as Weber” (see below). Needless to say, Popper criticized Marxism as a whole, and especially in chapter 25 of *The Open Society and Its Enemies*, he argued the logic of describing history in connection with Weber’s methodology. This means that Popper is important for both Marxists and Weberians.

We would like to pick up Terushiro Sera, who was once strongly influenced by Marxism, and has now mainly shifted to the Weberian camp and in the past has had dialogue with Masao Maruyama, whose views will also be discussed in the following section. Sera was a graduate of the University of Tokyo, the same university as Maruyama’s alma mater, and was Maruyama’s junior. When Sera was an assistant at the University of Tokyo, he belonged to the same study office as Maruyama.² Sera largely majored in the legal systems of Western medieval history. He tried to analyze Western feudal societies and studied the methodology of history that was supposed to serve as the basis for such analysis. In the course of critically examining Marx’s view of history, he tried to be acquainted with Weber and produced many famous translations of Weber’s works, and became a forerunner in the studies of Weber after the war.³ It was by way of studying Weber’s methodology that Sera got acquainted with Popperian philosophy.

Nevertheless, Sera’s central interests were in “Marx as well as Weber” rather than “Weber as well as Popper”. In Japan, it was not unusual for researchers to begin with Marx and then move closer to Weber. In his article, Sera recalls his young student period in the following way.

I came to realize that there were many problems for which the formulas of Marxism could not suggest any solutions. This made it necessary for me to critically re-examine the ideas of Marxism, and through such studies, I gradually became less and less a simple Marxist young lad.¹

The reexamination of Marxism forced him inevitably to get closer to Weber and Popper. In Japan during the prewar time, orthodox Marxists (the so-called Kouza School”) came close to Weberian approaches while maintaining Marxism. For example, Goro Hani argued that economic factors alone did not always play the primary role in the development of capitalism but that it was necessary to take into consideration the influences from the so-called superstructure, including political, social, and ideological factors. He was implicitly aware of the fact that introducing Weber’s social scientific methods mean to go beyond Marx’s materialist view of history, but he also anticipated the birth of a methodological approach that would stimulate both sides to merge into one body of knowledge, and in consequence to “make Marx a Weberian.”²

² Sera, T., “My Student Years (Watashi no gakusei jidai),” *Hogaku*, vol.49 (1985), no.1: 72 f.

³ Hayashi, T., “On the legal history of Sera: A note (Sera hoshigaku ni tsuite: hitostu no oboegaki),” *Hogaku*, vol. 44 (1981), double issue for no. 5 and 6: 599; Koyama, S., “Mourning the Passing away of Professor Sera (Sera sensei no goseikyo wo itamu),” *Bulletin of the Tohoku University Faculty of Law Alumni Association (Kaihou)*, no.16, 1989: 3.

¹ Sera, T., *op. cit.*: 74.

² Uchida, Y., *Weber Reception and Cultural Topology (Weber jiyuu to bunka no topology)*, Libroport, 1990: 190 ff; Schwentker, W., *Max Weber in Japan: Eine Untersuchung zur Wirkungsgechichte 1905-1995 (Max Weber no nihon: Jiyuu shi no kenkyu 1905-1995)*, translated by Noguchi, M, Suzuki, T, Hosoi, T, and Kimura, Misuzu Shobo, 2013: 100 ff.

It was Hisao Otsuka, an internationally renowned historian of economics, who pushed the “Weberianization” of Marx in the most original way. Otsuka himself was of the orthodox Marxist school, and in the postwar period, his works formed the school known as “Otsuka Shigaku (Historiography à la Otsuka)” and his introductory book, *Methods of Social Sciences* written in 1966, was sold over 500,000 copies (as of 2013).¹ This was an exceptional bestseller of the methodology of the social sciences. While, here, we refrain from investigating its details, we can say that Otsuka’s position was, in summary, an attempt to synthesize Marx and Weber in a complementary way, disregarding their epistemological and methodological incompatibility. In a sense, it was an attempt to “rescue Marx for the social sciences with Weber’s help”.² On the other hand, Otsuka’s view of history was constantly criticized, especially from Marxist camps, and also it provoked Marxist repugnance simply on the grounds that he associated Weber with Marx.³

In sharp contrast to the position of Otsuka Shigaku, Sera made a clear distinction between Marx’s views of history and methodologies on the one hand and Weber’s on the other. He distinguishes and discusses four types of comprehension of history and methodology of history: naïve positivism as represented by Ranke, Marx’s materialist view of history, Weber’s methodology, and Popper’s methodology, and gives high estimation to the latter two. It seemed to him that naïve positivism and Marx’s materialist view asserted that historical facts and laws have objective meaning in themselves, while Weber and Popper put emphasis on the fact that researchers give meaning to history by selecting and describing facts from their own “point of view” or “interest in the issue”.⁴ These two positions are completely different and incompatible.

In defending Weberian and Popperian views of history and their methodologies, Sera encountered the important question of “how to ensure the objectivity of describing histories?” In describing history, historians and researchers often realize that a “point of view” and “interests” are related to one’s value system, and are themselves entirely subjective in nature. If this is the case, then there will be as many different images or descriptions of history as many historians and researchers can exist. As a result, the question of how to ensure the objectivity of historical description becomes a serious problem. According to Sera, Weber’s and Popper’s solution to this problem basically consist in (1) giving a causal historical description using “ideal types” as a kind of empirical law, and (2) testing the hypotheses to determine their validity. He understood that the testing of a hypothesis consists of (a) checking its logical consistency and (b) subjecting the hypothesis to [empirical] refutations.⁵

¹ Schwentker, W., *op. cit.*: 181.

² Schwentker, W., *op. cit.*: 196.

³ Michishige, I., “Hisao Otsuka and Tomoo Matsuda: Theoretical Structure of History à la Otsuka and Its Significance (Otsuka Hisao and Matsuda Tomoo: Otsuka shigaku no riron kosei to sono igi),” in Sumiya, K, and Wada, T, eds., *Gazing into History: Otsuka Shigaku and Its Times (Rekishi he no shisen: Otsuka shigaku to sono jidai)*, Nihon Keizai Hyoronsha, 1998: 154.

⁴ Sera, T., “Legal History (Hou shigaku),” in Aomi, J. ed., *The Modern Law 15 (Gendai hou 15)*, Iwanami Shoten, 1966: 123 ff.

⁵ *Ibidem*, 131 ff.

Thus, in the context of the pursuit of objectivity in history especially via the testing of hypotheses, Sera defends Popper as well as Weber. Sera appreciates that Popper's critical method of conjectures and refutations has a public character and provides a means of pursuing objectivity in the sense of intersubjectivity, as follows.

Regarding the issue of Wertfreiheit [axiological neutrality], I think Weber tended to treat it as a matter of individual ethics for each researcher, but Popper takes it down to the social dimension and points out that academic study is not possible without freedom of thought reinforced by social conditions. I think this is the only point where he goes further than Weber.¹

On the other hand, Sera describes Popper's views of history as "very Weberian," but in discussing the differences between Popper and Weber, he turns around and concludes that "we cannot expect much" from Popper's methodology of history, or that "there are elements that we cannot accept" in it.² This change of attitude, insofar as we can understand it, is related to Popper's view of (1) ideal types as a kind of empirical law, as mentioned above. Let us quote the relevant passages.

In his [Popper's] social science, each fact is only useful as a demonstrative or disproving example of universal law, and there is no room for such notions as the historical individualities or the historical limitations of social phenomena. As a matter of fact, he rejects the concept of "periods." He thinks that the concept of diversity of each period is merely a result that the lack of exhaustive causal analysis brought about. Thus, in his case, the purpose of science lies in verifying universal laws that transcend the so-called domain of history, therefore it is not surprising that he has little interest in studies of history. Therefore, his theory is not only a denial of historicism, but in fact, it has a markedly "anti-historical" character. So, when we enter the field of social science and historiography, we realize that Weber is much deeper.³

According to Sera, describing histories is, in the first place, to study facts irreducible to universal laws. Historical facts have uniqueness corresponding to the varieties of each "period," and therefore each "period" has its uniqueness. Sera asserts that it is the task of historians to comprehend and describe this uniqueness, but Popper's methodology cannot depict it, because Popper believed that all events of history can be encompassed by universal laws. So, Sera thought that Weber's historical methodology was superior in this respect.

¹ Maruyama, M. and Sera, T., "Dilemma of History (Rekishi no dilemma)," (a dialogue held in 1980) in *Masao Maruyama: Dialogue 8 (Maruyama Masao: Zadan 8)*, Iwanami Shoten, 1998: 255. This will be abbreviated as *Dialogue 8 (Maruyama Masao: Zadan 8)* in the following.

² Sera, T., "Legal History (Hou shigaku)," in Aomi, J. ed., *The Modern Law 15 (Gendai hou 15)*, Iwanami Shoten, 1966: 123 ff. 132. See also *Dialogue 8 (Maruyama Masao: Zadan 8)*: 256.

³ *Dialogue 8 (Maruyama Masao: Zadan 8)* : 256 f.

If such a judgement can have any significance, it is only for those people who have read carelessly “the logic of describing history” in Chapter 25 of *The Open Society and Its Enemies* without paying attention to the importance of Popper’s arguments about the functions of viewpoints. However, Popper presents the “logic of situation” or the situational analysis in many places, for example, in *The Poverty of Historicism*, and gives the readers an utterly different image that does not match Sera’s understanding.

One of its most important tasks is undoubtedly to describe interesting happenings in their peculiarity or uniqueness; that is to say, to include aspects which it does not attempt to explain causally, such as the ‘accidental’ concurrence of causally unrelated events. These two tasks of history, the disentanglement of causal threads and the description of the ‘accidental’ manner in which these threads are interwoven, are both necessary, and they supplement each other; at one time an event may be considered as typical, i.e., from the standpoint of its causal explanation, and at another time as unique.¹

At the very least, if Sera only had read this passage, he could have evaded the wrong conclusion that Popper’s methodology was “anti-historical”, without difficulty. Sera’s complaints are also very similar to those of Maruyama, whom we will discuss in the next section. We hope the discussion in the next section can clarify a major misunderstanding with respect to the receiving Popper.

4. How had Masao Maruyama fallen into a pitfall of relativism?

As we have seen above, in Japan, Popper’s philosophy has been studied mainly from the perspective of the philosophy of science. However, this does not mean that Popper’s socio-political philosophy itself was ignored. The idea of the “open society” as social and political philosophy had left a great impact on the internationally renowned and leading Japanese scholar, Masao Maruyama (1914-1996). However, almost 20 years later, he came to take distance from Popper.² What was the reason for this? It is useful to initially glance at the intellectual relationships between them.

Maruyama was a professor of history of Japanese political thought at the University of Tokyo. He trained many talented students and played an important role as one of the intellectual leaders purporting to enlighten the Japanese people. It seemed that it was Herbert Norman’s letter to Maruyama in 1951 that led the latter to read Popper’s *Open Society and Its Enemies*.³ It is clear that Popper’s philosophy influenced Maruyama considerably during the 1950s. We can find Popper’s footprints in Maruyama’s two famous articles: “Opening the Country (Kaikoku)” and “Being and Doing (‘Dearu’ koto to ‘Suru’ koto),”⁴ both published in 1959. But according to the

¹ Karl Popper, *the Poverty of Historicism*, ARK ed. London: Rutledge, 1994: 146 f.

² *Dialogue 8 Maruyama Masao: Zadan 8*: 256 f.

³ Herbert Norman, *The Collected Works of Herbert Norman (Herbert Norman zensyuu)*, Iwanami Shoten, 1978: 436 ff.

⁴ Both articles are included in *The Collected Works of Masao Maruyama (Maruyama Masao shuu)*, Vol. 8 Iwanami Shoten, 1996.

recently published *Lectures of Masao Maruyama [Separate Volume II] 1957-58*,¹ Maruyama used quite often the concepts of “closed society” and “open society” in his lectures on the history of Japanese political thought. Where were Popper’s main influences? They seem to have been on two fronts.

Firstly, he uses these two concepts as ideal types in describing the movements of the Japanese history, and secondly, he adopts the idea of “open society” as his own political ideal within his own historical context. To say in traditional terms, Popper gave great influence to the “Erkenntnis” of Maruyama as a historian of ideas and to his “Praxis” as an enlightening thinker and activist.² Let us first try to make Popper’s influence on Maruyama’s views on the history of Japanese political thought clear.

Maruyama asserts that Japan had experienced “Opening the Country” three times. He attempted to explicate these events of history by using Popper’s concepts of the “open society” and “closed society.” In order to understand his main ideas, we must at least refer to what he calls the “second Opening of the Country” and the “third Opening of the Country.”

The “second Opening of the Country” refers to the Japanese historic event that the closed Tokugawa regime (Edo period in Japanese history) was forcibly opened from the outside, i.e., by Perry’s fleet detached from the United States in 1854.³ Japan began advancing towards the “alleged civilized era” known as the Meiji period. This was a period of great renovation and “birth pains” to create a new society. According to Maruyama, this second opening of Japan to the West was merely an opening to Western technologies and not, as the phrase “Wa Kon Yo Sai (Japanese spirit with Western learning)”⁴ suggests, to the spirit that made Western civilization what it was. As shown by the fierce exclusivist movement (ultra-nationalism), the Japanese (especially the ruling class) of the time sought only to adopt advanced Western technologies while maintaining the spirit of the old Japanese society. As Maruyama points out with regard to Nobuhiro Sato (1769-1850), there was clearly a “feudal Japanese inferiority complex”⁵ that always sought to secure spiritual superiority at all costs.

Maruyama describes Japan’s Edo period as a “closed society” and depicts in great detail its culture and the mentality of the people, social customs, institutions, and morals and behaviour patterns. It is interesting that Maruyama, like Popper, points out the disdain of the ruling class for

¹ Maruyama, M., *Lectures of Masao Maruyama [Separate Volume II] 1957-58 (Maruyama Masao kougi roku, bessatu II, nihon seiji sisou shi, 1957/58)*, University of Tokyo Press 2017. In the following this book will be abbreviated as *Lectures [Maruyama Masao kougi roku, bessatu II]*.

² Editors of this volume testify Popper’s influence on Maruyama’s views in the following way. “..... Maruyama’s process of reconstructing the history of Japanese political thought can only be described as a unique trial-and-error testing process of the ‘transition from a closed society to an open society’ in the history of Japanese thought.” (*Lectures [Maruyama Masao kougi roku, bessatu II]*: 331.)

³ The “first opening” was the encounter with Christians in the 15-17th centuries, according to Maruyama.

⁴ This word means that Japanese people should keep Japanese spirit (ethical mind) invariantly in importing and digesting the western materialistic technologies. According to Maruyama, *Lectures (Maruyama Masao kougi roku, bessatu II)*: 168, it was Hakuseki Arai (1657-1725) who formulated these ideas.

⁵ *Lectures (Maruyama Masao kougi roku, second volume)*: 76.

lower casts (peasants, craftsmen and merchants, etc.) as the characteristics of the “closed society.”¹ Maruyama, as a historian of political thought, pays special attention to the ideological situations in Japan. It is remarkable that Maruyama’s description of this period uses Popper’s concepts of “closed society” and “open society” as a framework of description.

The “third Opening of the Country” was caused by the defeat of Japanese militarism in World War II. The defeat of Japan meant the collapse of the so-called Greater East Asia Co-prosperity Sphere, which was the reversal of “feudal Japanese inferiority complex” as pointed out above. Japanese imperialism lost its extended territory and was forced to open the closed system that attempted to put the Asian nations under the yoke of Japan racially and economically, and at the same time, was forced to emancipate Japanese people from the severest militarism. The American occupation and governance relentlessly destroyed the old feudalistic relations and characters of the Japanese closed society. Maruyama considered this sweeping renovation as the start of the “third Opening of the Country.”

Japan started a movement—forced again by the outside victorious powers—to liquidate ultra-nationalism and to absorb the Western mind, especially political ideals such as democracy and equality under the law and so on, in order to rebuild the nation as a truly peaceful one. As usual, in defeated countries, emperors are used to being swept away by revolution, for example, as was the case with the German Kaiser after World War I. In Japan, however, the emperor system was sustained by exalting the emperor as a “symbol of our country” under the new constitution. It was such incompleteness of the liquidation of ultra-nationalism that Maruyama faced after the defeat of Japan and decided to participate in postwar politics.

Let us take a glance at the differences between Maruyama and Popper concerning their arguments about the process of establishing the “open society.” This will help us understand more clearly Popper’s influence on Maruyama. The “open society” discussed by Popper was a remote goal in the ancient Greek world, where we can see various contacts and clashes of various peoples and cultures. It was the large trading area of the Mediterranean world that made possible the ancient Greek world a forerunner of the open society. According to Popper, it was the “Great Generation,”² consisting of Pericles, Socrates, Protagoras, Democritus, and the Gorgias’ school, that turned on light of the open society and carried out the anti-slavery movement. This movement emerged endogenously, especially in comparison with Japan. The ancient Athenian society and Japan are each maritime nations, but the latter could not have an endogenous bud (idea) of an “open society”. This point forms a striking contrast with ancient Athenian society.

From this perspective, it is evident that the “Opening of the Country,” whether the second or the third one, was forced by outside powers, as Maruyama described partly them. From the geographical point of view, maritime nations usually have great chances to achieve prosperity by trade like Athens, but Japan was unable to take advantage of its commercial opportunities

¹ *Lectures (Maruyama Masao kougaku roku, bessatsu II)*: 237. See, for example, Popper, *The Open Society and Its Enemies*, Rutledge and Kegan Paul, 1966, chapter 4, note 29. This will be abbreviated as *Open Society* in the following.

² Popper himself coined this word. See *Open Society*, chapter 10, section 4.

(especially during the Edo period) due to its isolation policies, and as a result, was stuck in exclusionism. Compared with the ancient Greek world, Japan was fundamentally a different and strange world. Moreover, Japan had not the movement towards an “open society” from within, but was always changed by outside powers. Maruyama, in connection with the “second Opening of the Country,” says the following.

..... Within this system, a completely heterogeneous mode of production and an independent class relying on it scarcely grew up, and the possibility of a fundamental confrontation with the whole system was largely blocked. Accordingly, there was scarcely room for the conditions for the powerful emergence of the ideologies or worldviews growing daringly from within to confront this system’s mentality in principle ... The closed society itself, which was the historical precondition of the Bakuhan system [Tokugawa regime] , did not fall in collapse until the impact of world-historical destiny and its progression towards the East put its sustainability in danger as a fatal blow to this vast system.¹

Although Maruyama used different historical case studies in order to make clear the possibilities of the “open society”, we may say that he successfully revealed the rich applicability of Popperian concepts by clarifying the importance of outside powers, and by using the concepts of “open society,” “closed society” and “culture clashes” as a basic framework to support his own thinking under different conditions of application.

However, Maruyama did not use the Popperian ideal types only as means for describing history, but also used them as his political ideals for his own society. He realized that we could utilize this ideal to reform Japan, which has not yet truly “opened” its doors to the outside world. He said as follows.

... It is not without significance to try to introduce a category with an “ahistorical” or “transhistorical” dimension, such as Bergsonian category or Popperian, into the historical situations as a framework for measurements.²

Maruyama regarded an “open”-“closed” conceptual pairing as “a category with an ‘ahistorical’ or ‘transhistorical’ dimension.” He thought that this pairing is a scale to evaluate critically the events of history, and as such it should stand “ahistorically” and “transhistorically” outside the flux of history. Maruyama made this point clear through his creative application of this scale in an article titled “Being and Doing (‘Dearu’ koto to ‘Suru’ koto)” (1959) written at the same year as the article “Opening the Country (Kaikoku).” This article is an appeal to us, the Japanese people, to step forward towards the direction of individualism, by which each of us takes the initiative in

¹ *Lectures (Maruyama Masao kougaku roku, bessatsu II)*: 118.

² Maruyama, M., *The Collected Works of Masao Maruyama (Maruyama Masao shuu)*, vol. 8, Iwanami Shoten, 1996: 47.

making concrete decisions and taking responsibility for themselves. In order to look at Popper's influence on Maruyama in the domain of ethics and politics, it will be useful to briefly sketch the content of this article.

What kind of group one belongs to and what attributes one possesses are matters of fact ("Being"), whereas "Doing" is a concept that refers to one's proactive performance of some task. Maruyama assumes that there is a mediating zone between these two domains. He characterizes it with a category of "Rashiku (like)." This category has the social power to demand us to "behave, as if a member of the group" to which we belong by way of Rashiku (namely by adjusting ourselves to the customary behavioral patterns of this group). This is the ethics or morals of closed societies. Maruyama contrasts such societies with a performance-based society, of which the scale is the achievements of individuals, in other words, what they do on their own initiative ("Doing"). He believed that this is where individualism lies. There he expected a possibility to break through the semi-feudal and conventional disciplines of Japanese society. His argument seems to express both a criticism and an irritation towards the Japanese society that demands "Rashiku." This argument reminds us of Popper's assertions in the following passage. It seems to us that Maruyama depicted the negative sides of Popper's assertions.

In our own way of life, there is an ever-widening field of personal decisions between the laws of the state on the one hand and the taboos we habitually observe on the other, with its problems and responsibilities; and we know the importance of this field. Personal decisions may lead to the alteration of taboos, and even of political laws which are no longer taboos. The great difference is the possibility of rational reflection upon these matters.¹

This is where Popper talks about critical dualism as a basis for the "open society". Maruyama seemed to have gained a hint through reading this passage and was led by his own mediation to the concepts of "Being" and "Doing" as a creative attempt to introduce an "individual decision-making" area into Japanese society. It is clear that this argument was widely welcomed in Japanese social and political movements at that time.²

However, it seems that Maruyama does not pay sufficient attention to Popper's grand scheme of history about the development of ethical ideas in the ancient Greek world. If he had paid sufficient attention, he would have gotten some hints for his argument about "Being" and "Doing," dualism of fact and decision, and furthermore for his study of the history of Japanese political thought in general.

Popper discussed dualism of fact and norm (standard, decision) and a way for going to critical dualism in chapter 5 of *The Open Society and Its Enemies*. In this chapter, Popper defined a "closed society" as a world of naive monism, where almost all people do not succeed in distinguishing

¹ *Open Society*, chapter 10, Section 1.

² His book: *Thought of Japan (Nihon no sisou)*, which contains this article, is still selling well today (109th printing as of September 2021), and there is even now a commentary book (Haruo Miyamura, *A Close Reading of Masao Maruyama's "Thought of Japan"* (Maruyama Masao "Nihon no sisou" seidoku) (Iwanami Gendai Bunko, 2001). Maruyama's book nowadays gets the status of a classic.

between (natural) laws and (legal) laws, and he discussed three stages in the procession from there to critical dualism where almost all people are sufficiently conscious of the changeability of legal laws by human wills. Popper indicated three stages of ethical consciousness in the development from naïve monism to critical dualism by the following concepts.

- (1) Biological version of naturalism
- (2) Ethical or legal positivism
- (3) Psychological or spiritual version of naturalism

From Popper's point of view, Maruyama's argument of "Rashiku" corresponds to the "ethical or legal positivism" described in (2) above. For norms are justified by what actually exists as conventional and customary practices. Conversely, Maruyama's thought, because it lacks a theory of these stages, also lacks the perspective to describe the phases of changes of ethical consciousness, although it may be able to describe the monistic fusion of facts and norms. It seems that Maruyama does not succeed in sharply picking up aspects of the developments from monism to dualism.

However, Maruyama was well aware of the necessity of considering events of history as phases of historical development in Japan. This required of him to reconsider the foothold on which the historians stand. Historians are bound to interpret and evaluate history from the standpoint of a certain kind of (value). However, these interpretations and evaluations will become objects for other historians within history. Maruyama perceived a problem here, because he ardently sought objectivity in describing history. There he found the problematics of **historicity** of those who are engaged in interpreting history and giving meaning to it. He expressed these problematics in the following words, "the subject of historical comprehension is at the same time a historical object".¹ Maruyama asserts that these problematics are "the problematics posed by Troeltsch, Meinecke, Mannheim, and others, namely, how is it possible to grasp historical individuality without falling into historical relativism?"² Maruyama devoted himself in vain to searching for an objective way of describing history. This situation forced him to become a relativist. This clearly shows how far away he came from what he thought twenty years ago when he introduced the pair of "open"- "closed" concepts as an "ahistorical" or "transhistorical" scale of evaluating historical events.

Maruyama believes that each historic event is unique ("einmalig" in German). He mistakenly thought that Popper's methodology could only force us to use the idea of laws and initial conditions, because it tacitly and wrongly presupposes the repetitive nature of history. From these standpoints, Maruyama even accuses Popper of being "tone-deaf to history," that is, someone who has never been tormented by the dilemmas associated with writing history.³

¹ *Dialogue 8* (Maruyama Masao: *Zadan 8*): 250.

² *Ibidem*. 253.

³ *Ibidem*. 254. It is not clear what is meant by "the problem of dilemmas associated with describing history." Maruyama also seems to send into oblivion that Popper, in chapter 10 of *The Open Society and Its Enemies*, describes the history of the reconstruction of Athenian democracy after the defeat of the Peloponnesian War. One who reads his inherent understanding of Plato or his interpretation of Socrates in this chapter can hardly accuse him of being a "tone-deaf of history." Herbert Norman, as above

But does this criticism of Popper have any validity? Popper evidently emphasized the importance of the viewpoints that unify events and give meaning to a series of events, and nowhere said that only the logic of laws and initial conditions, and nothing else, is sufficient to describe histories. In addition to this, Maruyama's epistemological thinking seems to be flawed. Isn't it self-evident that we cannot make objective and absolute judgements without standing outside history? Popper proposed the replacing of the concept of objectivity by the concept of intersubjectivity through criticizing Mannheim's sociology of knowledge in chapter 23 of *The Open Society and Its Enemies*. It seems that Maruyama did not understand Popper's argumentation.

Furthermore, if Maruyama's "problem of the dilemma in describing history" means that it is inevitable for us to remain relativists because of the impossibility of standing outside history in order to make "objective judgments". Below, we briefly discuss Popper's solution to this problem. Popper offers a logical argument to overcome the **historist** argument. Popper discusses it in the context of Toynbee's historism. While Toynbee's historism asserts that no historian can escape from the constraints of his or her "historical" habitat, Popper denies this type of constraint of habitat in the following way.

... (It would be another form of the paradox of the liar; for if no genius is exempt from expressing the fashions of his social habitat, then this contention itself may be merely an expression of the fashion of its author's social habitat, i.e., of the relativistic fashion of our own day.)¹

From this perspective, Maruyama's dilemma that the historian cannot escape from the historical constraints of his own historicity will be interpreted as a kind of liar's paradox. What does this mean for the logic of describing history? Popper says as follows.

For it indicates that historism or historio-analysis can be applied to historism itself, and this is indeed a permissible way of dealing with an idea after it has been criticized by way of rational argument. Since historism has been so criticized, I may now risk historio-analytical diagnosis, and say that historism is a typical though slightly obsolescent product of our time; or more precisely, of the typical backwardness of the social sciences of our time. (*Ibidem.*)

Maruyama neglected Popper's logical analysis of historism and as a result, fell into its trap (the dilemma of describing history). Popper's solution to escape from this trap would recommend Maruyama to be within history and to make a historio-analysis of himself and present it to the public discussants. It might be difficult to try to be critical of oneself. He does not show sufficient access to this position in his Erkenntnis of history. All that Maruyama had to do was to grow his

referred to, had pointed out in his letter to Maruyama that Popper's Open Society depicts the rise and fall of Athens (*op. cit.*: 437).

¹ *Open Society*: 256. In the note to this passage, Popper writes as follows. "For if *all* thought is in such a sense 'inevitably relative' to its historical habitat that it is not 'absolutely true' (i.e., not true), then this must hold for this contention as well."

own historical consciousness and use it as the basis for his own value judgments and interpretations, without worrying about the dilemma. Objectivity is located in the severest intersubjective criticism.

On the other hand, Popper had already opened a way to the logic of describing history without being entangled in the dilemma and the shallowness of the covering law model. For Popper's article, "On the Theory of the Objective Mind,"¹ had presented the logic of describing history quite differently from the mere application of the covering law model. It was a developed form of the "situational analysis" or the "logic of the situation" that Popper had already talked about in *The Poverty of Historicism* and *The Open Society and Its Enemies*.

However, this important point was completely ignored by Sera, as had been indicated in the previous section, in his dialogue with Maruyama in 1980. Although Sera was a famous Japanese historian of European medieval history, a leading figure in the study of Popperian philosophy in Japan at this time, and therefore was best placed to point out the development of Popper's logic of describing history, but he did not carry out this task.

Popper's article, "On the Theory of the Objective Mind," informs us of the world of objective mind that independently exists outside the human subjective mind, in other words, World 3, and also explains how objective ideas develop according to the diagram of "P₁(problem)→TT (tentative theory)→EE(error elimination)→P₂(new problem)." This is a methodological refinement of the so-called method of understanding (Verstehen) and of the dialectics that describes the development of ideas in the Hegelian style. As Popper himself pointed out, this schema of problem-solving is an alternative to the traditional dialectical triad model of the developments of history, and may be called legitimately the "logic of describing history." Therefore, we can say that Maruyama was merely criticized a straw figure of Popper.

By the way, Yosuke Mamiya, a researcher who has discussed Maruyama's views, claims that Maruyama understood Popper's World 3 without mentioning it as such.² According to him, Maruyama assumed that there is a world of "works" or "fictions" between the natural, physical world on one side and the human subjective world on the other. He further asserts that Maruyama's "world as fiction" is similar to Popper's World 3. But Mamiya fails to point out that Maruyama does not sufficiently argue the meaning of the existence of "works" or "fictions". Mamiya only emphasizes an aspect of Maruyama's argument, i.e., that "world as fiction" is not a world that can be created freely. He puts it as follows, "He [Maruyama] means public orders and institutions in a real sense, as nomos in opposition to physis." (p. 230). Needless to say, the opposition between nomos and physis had been the central idea of Popper's "Nature and Convention," the title of chapter 5 of *The Open Society and Its Enemies*. If Mamiya's assertion is correct, then Maruyama, despite the influence of Popper, has omitted a very important issue, i.e., the meaning of the existence of "works" or "fictions" and of the forms of their development. Maruyama could not

¹ This article is contained in *Objective Knowledge* by Oxford University Press in 1972 and translated into Japanese by Hiroshi Mori, contained in *Objective Knowledge*, Bokutakusha, 1974.

² Mamiya, Y., *Masao Maruyama (Maruyama Masao)*, Chikuma Shobo, 1999: 228 ff.

have presented a schema like that presented by Popper. Maruyama's thought does not succeed in forming the methodology of history that he, as a historian of political thought, urgently needs in order to describe the unique movement of ideas in World 3.

The "logic of describing history," which Maruyama was not able to fully digest, has recently been steadily explored by Kogawara and his research group in their attempt to take over Popper's methodology.¹ This is an attempt to inherit Popper's P1-TT-EE-P2 scheme from the standpoint of methodological (institutionalistic) individualism, and to grasp human activities that are controlled by ideas and at the same time, by new ideas of individuals. We hope that these attempts contribute to the reception of Popper.

References

- Ayer, A. J. (1946). *Language, Truth, and Logic*, 2nd edition. Gollancz.
- Fukasawa, T. (2017). The Conflict of Two Economics and Guidelines for Studying Economics: Marxian Economics and 'Marginal Revolution' II (Futasu no keizaigaku no soukoku to keizaigaku gakusyuu no shisin: Marx keizaigaku to 'genkai kakumei'), *University Reform and Lifelong Learning: Bulletin of Yamanashi Gakuin Lifelong Learning Center Daigaku kaikaku to shougai gakusyuu*.
- Imai, K., Uzawa, H., Komiya, R., Negishi, T. & Murakami, Y. (1971). *Price Theory I (Kakaku riron I)*, Iwanami Shoten.
- Kageyama, Y. (2000). *The Thought of Critical Rationalism (Hihanteki gouri shugi no Sisou)*, Miraisha.
- Kogawara, M. (1997). *Popper: Critical Rationalism (Popper: Hihanteki gouri shugi)*, Kodansha.
- Kogawara, M. (2010). *Falsificationism (Hanshou shugi)*, Tohoku University Press.
- Kogawara, M., (2000). (ed.), *Critique and Challenge (Hihan to chousen)*, Miraisha.
- Mamiya, Y. (1999). *Masao Maruyama (Maruyama Masao)*, Chikuma Shobo.
- Maruyama, M. (1996). *The Collected Works of Masao Maruyama (Maruyama Masao shuu)*, Vol. 8, Iwanami Shoten.
- Murakami, Y. (1971). Possibilities and Limitations of Modern Economics (Kindai keizaigaku no kanousei to genkai), *Chuo Koron*.
- Nakamura, H. (1961). *Logical Positivism and Marxism (Ronri jisshou shugi to Marx shugi)*, Aoki Shoten.
- Norman, H (1978). *The Collected Works of Herbert Norman (Herbert Norman zensyuu)*, Iwanami Shoten.
- Omori, S., (1953). "Logical Positivism (Ronri jisshou shugi)," in *Philosophical Magazine (Tetsugaku zasshi)*, Vol. 68, No. 718.
- Popper, K. R. (1994). *The Poverty of Historicism*, ARK ed. Routledge.
- Popper, K. R. (2013). *The Open Society and Its Enemies*. Alan Ryan (New one-volume ed.) Princeton.
- Popper, K. R. (1959). *The Logic of Scientific Discovery*, [1934]. (as *Logik der Forschung*, English translation 1959).
- Sawa, T. (2003). *The Road to Economics: The Gutenberg Forest (Keizaigaku eno michi)*, Iwanami Shoten.

¹ Kogawara, M., Matsuo, Y., and Yeo, H-S., "Popper's Methodological Individualism and the Situational Analysis," in Bulle, N. and Di Iorio, F. ed., *Palgrave Handbook of Methodological Individualism* (forthcoming).

Critical Rationalism and the Internet

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ABSTRACT

The aim of this paper is to consider whether critical rationalism has any ideas which could usefully be applied to the internet. Today we tend to take the internet for granted and it is easy to forget that it was only about two decades ago that it began to be used to any significant extent. Accordingly in section 1 of the paper, there is a brief consideration of the history of the internet. At first sight this makes it looks implausible that any of Popper's ideas could be applicable to the internet, since Popper died before the internet came into general use. However, section 2 argues that Popper's theory of World 3 does apply very well to the internet. This application is significant because, as shown in section 3, it leads to the problem of misinformation, which is one of the most significant problems generated by the internet. In section 4 there is an attempt to solve this problem using ideas taken from Popper's epistemology. It is argued that there should be changes in education designed to prepare students for the internet age. Teaching in the internet age should focus on presenting to the students not just the accepted theories but also the evidence on which they are based. An illustration of how this might be done is given by considering an example from science teaching, namely the teaching of Newtonian mechanics in the last years of school or first years of university.

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1. Introduction. History of the Internet

It was during the late 1960s and early 1970s that the first tentative steps were taken to connect computers so that information could be passed between them. A number of systems were developed for this purpose in different parts of the world, but perhaps the most significant was the one produced by the USA's Defense Advanced Research Projects Agency (DARPA). DARPA's packet switching network was called ARPANET. A well-known anecdote, relating to this early period, concerns the first ARPANET link, which was established between the University of California, Los Angeles (UCLA) and the Stanford Research Institute on 29 October 1969. To check whether the link had been established, the participants were in touch by phone. First L was typed and it was checked by phone that it had appeared at the other end. Then O was typed and its appearance was again checked by phone. However, when G was typed, the system crashed.

Still great oaks do sometimes from tiny acorns grow. By 1981 ARPANET had 213 hosts. Another significant date was 1 January 1983 when ARPANET replaced some of its earlier protocols by the much superior TCP/IP protocols. TCP/IP allowed ARPANET to be connected up to other networks.

The story now shifts to CERN (*Conseil Européen pour la Recherche Nucléaire*), which, in the second half of the 1980s, created for its own internal use an extensive internet using TCP/IP protocols. Berners-Lee, who was working at CERN, had the idea of improving this by using hypertext. He was allowed to proceed with his plan, and by Christmas 1990 had developed the basic tools for what he decided to call the World Wide Web. These included the HyperText Transfer Protocol (http) and the HyperText Markup Language (html). In January 1991 the first Web servers outside CERN were established, and, in the 1990s, the growth of the internet became explosive. In 1993, only 1% of telecommunicated information went through the internet, but, by 2000 this had risen to 51%, becoming 97% by 2007.

It is worth noting that virtually all the research and development which led to the modern internet was publicly funded. In fact, commercial use of ARPANET was strictly forbidden, and connections were restricted to military sites and universities. CERN was of course also government funded. Both CERN and Berners-Lee made the Web available freely with no patent and no royalty payments being required. Once the internet had been developed, however, it was rapidly commercialised, leading to the dot-com crash of 2001.

Let us now return to critical rationalism. This is the philosophy first developed by Popper. Yet Popper died in 1994 when use of the internet was still in its very early stages. It might therefore seem unlikely that any of Popper's writings could have a direct application to the internet. Yet I will argue that one of Popper's main theories does apply in a very striking fashion to the internet. This is his theory of world 3.

Popper seems to have developed his theory of world 3 in the second half of the 1960s. What became the standard account of this theory appeared as chapters 3 and 4 of Popper's book *Objective Knowledge*, which was published in 1972. Chapter 3 *Epistemology without a Knowing Subject* had

already been published in 1968, while Chapter 4 *On the Theory of the Objective Mind* was based on articles which had appeared in 1968 and 1970. In his 1972 exposition, Popper uses the term ‘third world’, but later, following a suggestion by his friend Sir John Eccles, he preferred to use the term ‘world 3’. In the present paper, I will use ‘third world’ and ‘world 3’ interchangeably.

Popper’s theory of world 3 was developed from Frege’s theory of the third realm (Frege 1918:19), which in turn had been developed from Plato’s famous theory of a transcendental world of forms. However, there were two very important differences between Popper’s theory and those of predecessors. Both Plato and Frege thought the world (or realm) which they postulated existed outside space and time independently of human beings. Popper on the other hand regarded his world 3 as existing in time and created by human beings.¹

From the dates just given, we can say that the internet in its modern form appeared about twenty years after Popper had developed his theory of world 3, and that it took a further ten to fifteen years for the internet to assume its present dominant position in contemporary life. Despite these long-time gaps, I will try to show in the next section that Popper’s account of world 3 applies very well indeed to the internet. This is what, in my view, gives Popper’s theory of world 3 a prophetic quality.

2. Popper’s Account of World 3 applies to the Internet

Popper begins by characterising the third world as (Popper, 1972, 106):

the world of *objective contents of thoughts*, especially of scientific and poetic thoughts and of works of art.

Now the term ‘internet’ is perhaps ambiguous. We could mean by ‘the internet’ the infrastructure of cables, computer hardware etc, together with the software that enable these to work. This, however, is not the sense in which I want to use the term ‘the internet’. I want rather to use the term to refer to the contents of all the web pages which are more or less publicly available. Now the internet in this sense does indeed contain almost all the content of scientific and literary works. Whether the internet contains the contents of works of art is perhaps more questionable. Consider paintings and sculptures. There are of course pictures of most such objects on the internet, but it could be argued that the full content of a painting or sculpture can only be obtained by seeing the original. The internet must contain hundreds of reproductions of the Mona Lisa, but the full content of that painting can perhaps only be obtained by viewing the original in the Louvre in Paris. The case of paintings and sculptures is therefore arguable, but for the most part the contents of the internet are the same as those specified by Popper’s initial characterisation of world 3.

I now want to argue that the main points, which Popper makes about world 3, apply to the internet. To do so, I will use the device of the *transformed quotation*. That is to say I will give a quotation from Popper making an important point about world 3, substitute for the expression ‘third

¹ For more details about the origin and development of Popper’s theory of world 3, see Gillies (2010).

world' (or a similar variant) the expression 'the internet'. So that the reader is not deceived, I will put the original expression in square brackets [...] after the phrase 'the internet'. The point of this of course is to show that what Popper originally said about world 3 is today true of the internet.

My first transformed quotation originally concerned the contents of world 3. It runs as follows (Popper, 1972)

Among the inmates of the internet [my 'third world'] are, more especially, *theoretical systems*; but inmates just as important are *problems* and *problem situations*. And I will argue that the most important inmates of the internet [this world] are *critical arguments*, and what may be called ... *the state of a discussion* or the *state of a critical argument*; and, of course, the contents of journals, books, and libraries.

Nowadays the contents of journals, books, and libraries are for the most part available on the internet. There may still be a few journals and books, which only exist in paper form, but even this small remainder is likely to disappear before long. As for 'critical arguments' and 'the state of a discussion', they are arguably more easily obtained from the internet now than they were from libraries in the late 1960s and early 1970s. In any area of research, there are usually blogs in which the principal participants discuss the current situation in the field. Such blogs give a good picture of the state of the discussion in the area and provide the relevant critical arguments.

Popper stresses in a number of places that world 3 is made by humans, and, of course, the same applies to the internet. In one striking passage Popper compares the human creation of world 3 to spiders making webs and bee's honey. The transformed quotation runs as follows (Popper, 1972, 159-60):

the internet [the third world] ... is the product of men, just as honey is the product of bees, or spiders' webs of spiders. ... larger parts of the internet [the third world] are *the unplanned product of human actions* ...

Popper introduces another analogy, that of building a cathedral. He says (Popper, 1972: 185):

... working on science is a human activity like building a cathedral.

This obviously applies to the internet, which is indeed like a cathedral rising up through the labours of vast numbers of workers.

Popper stresses in another passage that individual contributions to the third world are vanishingly small. The transformed quotation runs (Popper, 1972, 161):

All of us contribute to the internet's [its] growth, but almost all our individual contributions are vanishingly small.

This passage has been criticized By Parusniková in her 2016, where she writes (p. 313):

Another way of diminishing the status of the human mind can be found in Popper's argument that 'almost all our individual contributions are vanishingly small' ... True, if the third world contains all knowledge accumulated in history, it continually balloons and reaches ever grander proportions; one person must surely gape at this achievement with the feeling of being tiny and overwhelmed. But Popper did not appropriately consider the other side of the same coin in this context, namely, the fact that the whole third world has been produced by human minds. The same researcher can well feel proud of this achievement of all mankind – and of himself as a part of it.

Indeed, Popper's use of the expression 'vanishingly small' is too strong. As already remarked, the internet enables an instant exchange of critical arguments in blogs, chats, etc. It creates the possibility of constant discussion, provoking participants to respond and communicate. In this way the internet accentuates the role of the individual subject in helping to create world 3. We can illustrate this point by continuing the cathedral analogy. Suppose there is a magnificent cathedral which is famous for a number of statues. Visitors come from all over the world to admire these statues, which we can suppose were made by several medieval craftsmen whose names are unknown. Would it be correct to say that the contribution of these individuals to the cathedral was 'vanishingly small'?

Popper's next major point about world 3 is that, although it is created by us, it becomes largely autonomous, and in fact reacts back on us. This is equally true of the internet as the following transformed quotation shows (Popper, 1972, 147):

the internet [the third world] ... is man-made. But ... the internet [this world] exists to a large extent autonomously; ... it generates its own problems, especially those connected with methods of growth; and ... its impact on any one of us, even on the most original of creative thinkers, vastly exceeds the impact which any of us can make upon it.

Moreover, Popper stresses that no individual can master even a small part of world 3, and the same of course applies to the internet. Here is the transformed quotation (Popper, 1972, 161):

We can act upon the internet [it], and add to it or help its growth, even though there is no man who can master even a small corner of the internet [this world].

These quotations show that Popper actually provided a theory of the internet more than twenty years before the internet came into existence. I have one more transformed quotation to give, but, as it introduces a new point, I will give it in the next section.

3. The Problem of Misinformation

Popper compares his world 3 to Plato's world 3 – the world of forms. Popper points out that in contrast to the Platonic world of forms, his world 3 is man-made, changing, and contains false

theories as well as true ones. The following transformed quotation shows that all this applies equally well to the internet (Popper, 1972, 122):

Plato's third world was divine; it was unchanging and, of course, true. Thus, there is a big gap between Plato's third world and the internet [his and my third world]: the internet [my third world] is man-made and changing. It contains not only true theories but also false ones, and especially open problems, conjectures, and refutations.

At the moment there are important developments in the analysis of the internet and its effect on human knowledge and so on society. This area of study is usually described as the philosophy of information. The idea is that information is obtained from the internet and that this gives rise to the information society. Can Popper's ideas about the third world make a contribution to this important area of contemporary research? I think they can.¹

In the last transformed quotation given, it was stressed that the internet contains both true theories and false theories, that is to say both correct (or sound) information, and misinformation. This is obviously the case. One need only think of holocaust denying websites which give an account, which is totally at variance with reality, of the concentration camps of the Second World War. It is of course still true to say that, in our information society, people do generally obtain information from the internet, but it should be remembered that information on the internet is mixed up with misinformation. So, the transformed quotation we have just given from Popper leads to what could be called the problem of misinformation. This can be stated as follows. Whenever we want to obtain information from the internet, how can we be sure that what we download is correct information and not misinformation? This is a serious practical problem, and, in the next and final section, I will propose a solution based on a development of Popper's epistemology.

4. A Solution to the Problem using a Development of Popper's Epistemology

When investigating a rather abstract problem, it is often useful to consider a concrete example. Here is one, which I think is fairly realistic. Suppose someone (Mr X say) would like to minimise his chance of getting heart disease by adjusting his diet. What should he eat? The standard answer for several decades has been that he should approximate his diet to either the traditional Mediterranean diet or the traditional Japanese diet, or perhaps some combination of the two. To simplify the discussion, let us concentrate on the traditional Mediterranean diet as it existed in the South of Italy before fast food outlets were established there. One feature of this diet is that, compared to the diet of Northern Europe, it contained much less of the saturated animal fats to be found in meat, cheese, milk and butter. In fact, in the South of Italy, butter was hardly known at all. Olive oil was used instead. The diet contained a little meat and cheese, but not very much since

¹ I have already made an attempt to apply Popper's theory of world 3 to the philosophy of information in my (2010) which discusses the ideas of Luciano Floridi – a leading researcher in this area. The present paper is a continuation of this line of thought. Floridi has provided an excellent introduction to the philosophy of information in his (2010).

there were few cattle in that part of the world. Instead, there was quite a bit of fish from the Mediterranean Sea, a whole range of beans, vegetables and fruit, and a great deal of pasta and bread. In addition, of course, wine, especially red wine, was a common beverage. Epidemiological surveys combined with experiments into how plaques formed in the arteries, suggested that this diet, and particularly its low levels of saturated fat, protected against heart disease. This view was quite revolutionary when it was introduced in the 1950s for, previously it had been thought that the Northern European diet, based on much more meat, creamy milk, and cheese, made those who consumed it stronger and healthier. However, the view that the traditional Mediterranean diet was in fact better at preventing heart disease came to prevail and is now the standard view in medical circles.

Recently, however, this standard view has been challenged by a new approach. According to this new line of thought, saturated fat is not as bad as it has been made out to be. What is really unhealthy in a diet is eating too many carbohydrates. Those who adhere to this new approach advocate eating more meat and dairy products but less bread and pasta than is to be found in the traditional Mediterranean diet.

Naturally the internet contains websites advocating both approaches. For those who are interested, a website which promotes the new pro-saturated fat, anti-carbohydrate approach is fatburningman.com. Let us therefore return to our puzzled Mr X. After surfing the internet, he feels hungry. Should he prepare a large plate of spaghetti with tomato and fresh basil sauce, or would it be better to have a steak with cheese sauce? Let us next see what parts of Popperian epistemology might be relevant to his dilemma.

In fact, Popper considers the question of whether there can be a rational choice between alternative actions in chapter 1 of his book: *Objective Knowledge*. He writes (Popper, 1972, 21):

a man of practical action has always to *choose* between some more or less definite alternatives, since even *inaction is a kind of action*.

But every action presupposes a set of expectations; that is, of theories about the world. Which theory shall the man of action choose? Is there such a thing as a *rational choice*?

This leads to what Popper calls the ‘*pragmatic problems of induction*’. In fact, Popper gives two such problems, but it is the second (Pr_2), which is relevant to us. Popper states this problem and then answers it as follows (Popper, 1972, 21-22):

Pr_2 Which theory should we prefer for practical action, from a rational point of view? ... My answer to Pr_2 is: ... we should *prefer* as a basis for action the best-tested theory.

Early in the same chapter, Popper defines *degree of corroboration* as follows (Popper, 1972, 18):

By the degree of corroboration of a theory I mean a concise report evaluating the state (at a certain time *t*) of the critical discussion of a theory, with respect to the way it solves its problems; its degree of testability; the severity of tests it has undergone; and the way it has stood up to these tests.

In the light of this, I think we could develop Popper's ideas, by adopting the principle that, in the case of a choice, it is rational to prefer as a basis for action the theory which is the best corroborated by evidence.¹

If we apply this to Mr X, then it is clear he should prefer the diet theory which is better corroborated by evidence, whether this turns out to be the Mediterranean diet theory, or the theory which advocates more meat and dairy products, but less carbohydrate. This answer is, in my view, correct in theory, but raises some practical problems. It would, in principle, be possible for Mr X to find out on the internet about the evidence in favour of and against the two competing theories of diet, and to form a judgment of which of the two theories is better corroborated by evidence. However, this is quite a skilled task, which Mr X may not be able to perform.

One way out of this problem for Mr X would be to try to assess the reliability of different websites. Mr X could, for example, consult nhs.uk. This is the website of the UK's National Health Service (or NHS), and the views expressed on it are approved by the British Medical Association and so represent mainstream views in scientific medicine. Mr X could well decide that it is better to trust the views of this website rather than others which do not have the same degree of backing from leading scientists. Now this is a perfectly sensible strategy, but yet not entirely satisfactory. It is based on an appeal to authority, while critical rationalism suggests that people should not rely on authority but rather form their own opinions in a rational and critical fashion. But how can an average man, such as Mr X, who is not a scientific expert perform such a task?

The answer to this new problem must lie in making changes in education, which prepare students better for the age of the internet. At the moment many subjects such as history, science, and medicine are taught in a rather dogmatic fashion. The accepted 'facts' are presented, and the student just has to learn them. Many of these 'facts' are really theories, or at least involve theories, and yet these theories are assumed without giving any of the evidence for them. Accepted 'facts' are now so easily obtained from the internet that there is no longer a strong reason for learning them by heart. However, what we cannot immediately tell is whether the alleged information we download from the internet is genuine information or rather misinformation. Thus, teaching in the internet age should focus on presenting to the students not just the accepted theories but the evidence on which they are based. I will now try to illustrate how this might be done by considering an example from science teaching, namely the teaching of Newtonian mechanics in the last years of school or first years of university.

¹ This may diverge from Popper's own views by giving 'degree of corroboration' an inductive interpretation. For a discussion of this point, see my (2009).

When I first learnt Newtonian mechanics more than sixty years ago, it was taught in a very dogmatic fashion. We began by learning Newton's laws such as force = mass $\times$ acceleration ($\mathbf{F} = m\mathbf{a}$), but no attempt was made to justify these laws in any way. They were just assumed. We were then taught how to apply these laws by being given a whole series of quite complicated problems to solve. Curiously though, these problems did not include the problem which had originally prompted Newton to invent his laws, namely the problem of explaining the motion of the planets round the Sun.

Suppose now that we want to teach Newton's laws in a non-dogmatic fashion by presenting the empirical evidence for these laws. This could be done by introducing some history of science into the teaching. A natural starting point would be a discussion of Galileo's law of falling bodies. The experiments whose results corroborated Galileo's law empirically were quite simple ones carried out on pendulums and balls rolling down inclined planes. These experiments are cheap and easy to perform, and it would be a simple matter to get students to carry them out at the beginning of their study of mechanics. In this way, they would see for themselves the empirical evidence for the first basic law in the field.

After this, there could be an account of Kepler's laws and how they were corroborated by Tycho Brahe's data. This sets the scene for introducing Newtonian mechanics as an attempt to explain both Galileo's law of falling bodies and Kepler's laws of planetary motion. It might be too difficult mathematically at this stage to derive the law that planets move in ellipses from Newton's theory, but it would be possible to give a mathematical derivation of the simpler case of a circle, which approximates to an ellipse, and it could be explained that the full derivation will be presented at a later stage when the student has learnt more mathematics.

I think it would also be desirable to contrast Newton's theory of action at a distance with Descartes' view that all action must take place by contact. Descartes' view seemed much more plausible at the time, and this led many contemporary researchers to be sceptical about Newton's law of gravity. Their doubts were overcome by the empirical successes of Newton's theory in explaining not just that Kepler's laws held to a high degree of approximation, but also that deviations from these laws occurred due to gravitational attractions between planets, in explaining not just Galileo's law but the variations in the acceleration due to gravity at different depths and altitudes. A brief account could also be given of the success of Newton's theory in explaining the tides and comets. The point of all this would be not only to show the student that Newton's theory was accepted because of its high degree of empirical corroboration, but also that a theory which at first seems surprising and counter-intuitive can gain acceptance through empirical success.

Teaching science by this historical approach which emphasises the evidence which led to the acceptance of theories would give a better understanding of the subject. In mechanics, for example, students often become confused about the question of centrifugal force versus centripetal acceleration. Newton's derivation of the shape of planetary orbits proceeds by considering the natural tendency of a planet to move off in a tangent according to Newton's first law which is overcome by the gravitational attraction of the Sun which pulls the planet round into an ellipse.

This example helps very much to clarify the issue of centrifugal force versus centripetal acceleration. Of course, students would still have to try to solve those difficult problems applying Newtonian mechanics to various complicated situations, but, with a better understanding of the principles of the theory, they would find these problems easier.

There are a number of other benefits of this kind of teaching of both science and other subjects. Students learning how older and less satisfactory theories have come to be replaced by new ones which are better corroborated empirically would naturally acquire the habit of evaluating their beliefs in the light of evidence, and so become less likely to be deceived by misinformation. One argument which is often used by the anti-scientific is: ‘why believe in what scientists say as their views are always changing?’ Those who are taught science in a dogmatic fashion might fall for this argument, but those who are taught by the historical approach which emphasizes evidence will be aware that these changes of scientific opinion are changes from an older theory to one which is better corroborated empirically, and so constitute a strength rather than weakness of science.

When discussing what theory people should base their actions on, I assumed implicitly that there was a theory which was both very well corroborated, and much better corroborated than its rivals. This is often the case in science, but not always. There can be situations where none of the existing theories in an area has been very successful and become well corroborated. This could be the case, for example, in some branches of psychiatry. An education which lays emphasis on evidence would be very useful in dealing with such situations because it would lead to a recognition of one’s own ignorance, and the consequent need to act with caution. Those brought up to accept theories dogmatically would be more inclined to accept a theory for which there was little or no evidence, and acting on such weakly corroborated theories is a recipe for disaster.

I am not of course saying that the kind of education I have been advocating is the answer to all problems. It would improve things but would not enable the average person to evaluate the evidence for a scientific or medical claim as skilfully as an expert. It should, however, enable such a person to follow the main arguments in favour or against a hypothesis and so understand why the majority of scientific experts accept the hypothesis in question, if this is indeed the case. Someone who had a grasp of the main arguments would be making an informed choice rather than a choice based entirely on blind faith in the views of experts.

References

fatburningman.com (consulted 25 November 2022)

Floridi, L. (2010). *Information: A very short introduction*. Oxford University Press.

Frege, G. (1918/19). Logical Investigations. Part I Thoughts. In Brian McGuinness (Ed.), *Gottlob Frege, Collected Papers on Mathematics, Logic, and Philosophy*, Basil Blackwell, [1984], pp. 351-372.

Gillies, D. (2009). Problem-Solving and the Problem of Induction. In Zuzana Parusniková and Robert S. Cohen (Eds.) *Rethinking Popper*, Boston Studies in the Philosophy of Science, Springer, pp. 103-115. (Available on ResearchGate)

Gillies, D. (2010). Informational Realism and World 3, *Knowledge, Technology & Policy*, 23(1), 7-24.

nhs.uk (consulted 25 November 2022)

-
- Parusniková, Z. (2016). The Devaluation of the Subject in Popper's Theory of World 3, *Philosophy of the Social Sciences*, 46(3), 304-318.
- Popper, K. (1972). *Objective Knowledge*. Oxford University Press.

Critical Rationalism and Post-Truth

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ABSTRACT

'Post-truth' has become a buzzword for numerous current crises: the fragmentation of the media landscape, the ongoing debate about 'fake news', the loss of trust in science, etc. Although these crises take place in society, it is claimed that the roots of post-truth can be traced back to the history of philosophy. Occasionally, it is asserted that Karl Popper's critical rationalism gave rise to post-truth: His rejection of verificationism has limited truth claims in the realm of science. Given the absence of infallible evidence and certainty, critical rationalism calls for challenging scientific authority. I argue that post-truth is compatible with critical rationalism from an epistemological point of view, considering that both positions are critical of certainty. However, in critical rationalism, fallibilism, responsibility, and the idea of criticism are combined, and in this respect, it offers a possible way to overcome the problems that are associated with post-truth. This treatment of the problems of post-truth results from the recognition of moral responsibility to take action on the basis of a hypothesis that remains open to revision.

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1. Introduction

The literature on post-truth is vast; numerous authors attempt to explain current affairs in politics and society by showing that twentieth-century philosophy led to a state of post-truth. The idea of an end of truth seems to be compatible with philosophy, society, and politics. It appears to capture the core of complex phenomena and thus provide explanations for them.

Whereas this impression is reasonable and appealing – using the term ‘post-truth’ implies intuitive explanations – it is also misleading. I am not convinced that the implicit presuppositions that post-truth brings with it are correct. Speaking of a ‘post-truth condition’ presupposes that truth once had been what gave scientific communities their stability and bewails the loss of this stability. In a theoretical-conceptual debate, ‘post-truth’ represents a combat term between positions that advocate a strong notion of truth and others that are critical towards truth.

Critical rationalism occupies a peculiar position in this debate since it is committed to an approximation to the truth but considers certain knowledge impossible. Sleight (2021) and Baron (2019) point out that the fallibilist epistemology of critical rationalism can be seen as the origin of an intellectual development that led to today’s post-truth condition. If scientific progress is achieved by replacing erroneous hypotheses, then one can legitimately ask whether critical rationalism calls for defending a hypothesis or trying to disprove it. It is characteristic of post-truth movements to attack confirmed findings – and critical rationalism negates verificationism. This consideration raises the question, which will be examined in the following: Are critical-rational scientists called upon to defend a dominant theory, such as the theories of climate studies that affirm the existence of climate change, against attacks or called upon to falsify it? By addressing this question, it will be explored to what extent post-truth is a crisis at all and how its relationship with critical rationalism can be assessed.

The paper is structured as follows: The second section briefly introduces post-truth, highlights challenging aspects of the concept, and states the problems addressed by this expression. The third section explores the connections between post-truth and philosophy. Subsequently, the central part of the paper examines the connection between post-truth and critical rationalism from an epistemological point of view in the fourth section and from a moral point of view in the fifth section. The epistemological connection between critical rationalism and a particular interpretation of post-truth is confirmed, but post-truth is shown to be at odds with critical rationalism when the moral character is considered.

2. A crisis follows the end of truth

The public image of Europe over the last decade, and to some extent an image of the whole world, has been one of disaster: in 2022, after years of internationally sanctioned occupation of Ukrainian territory, Russia launched a military attack on Ukraine and began a war; global temperatures are rising; extreme weather disasters caused by human environmental destruction ruin stretches of land and cause lethal casualties; the COVID-19 pandemic and the attempts to

establish public health measures led to a political radicalisation of anti-vaccinationists and science deniers; religious fundamentalists commit terrorist attacks because of failed migration and integration policies; authoritarian regimes undermine democracies; the Brexit campaign, conducted with the help of lies and half-truths, has contributed to the UK leaving the EU.

I am aware that this list may be considered ideologically biased by nationalists of any kind, Brexiteers, anti-vaccinationists, climate change deniers, and so on. This rather performative circumstance may be added as an additional item to the list, illustrating what these disasters are accompanied by and what shapes their image: public disagreement. For each example given, there may be disagreement from a range of different groups about the causes, the question of whom to blame, and arguably about my judgement. Within different groups of the population, opinions have hardened to such an extent that supporters of other points of view can merely be understood as deluded followers of an ideology who apparently prefer to turn their backs on the truth. Their worldview appears to be a mixture of random opinions justified, at best, by conspiracy theories, ‘alternative facts’, or ‘the elite’s doctrine’. Such accusations are made by any group against any other (cf. Tavernise, 2019, 122). Hence, a popular attempt to better understand the given crises is by interpreting the recent years as a time of ‘post-factual’ or ‘post-truth politics’, or more generally, as a ‘post-truth era’.

There is no specific post-truth manifesto that introduces the concept and provides criteria for what counts as a post-truth phenomenon and what does not. In 2016, the term was elected as ‘word of the year’ by the Oxford Languages department at Oxford University Press (cf. Oxford Languages, n. d. a.). The reason for voting a term as ‘word of the year’ is its popularity, i.e., that a term “has attracted a great deal of interest over the last 12 months” (Oxford Languages, n. d. b.). Academic accounts that engage with post-truth confirm that the term “has become intensely popular in media and academic circles” (Bufacchi, 2021, 347). However, when analysed as a concept, there is also reason for dissatisfaction. The brief explanation in Oxford Languages (n. d. a.)¹ neither provides a clear conceptual exposition nor is it intended to do so. Post-truth “is not a proper analytical term with a developed history and an accepted set of theses” (Carlson, 2018: 1881), it is “murky” (Bufacchi, 2021, 347), and “appeals to the masses through style, not substance” (Mika and Matapo, 2018, 187). Jandrić (2018) concludes that post-truth “is a complex mashup of signals, data, information, knowledge and wisdom; truth and deceit; fact and emotion; reason and instinct” (110). There is no conceptual basis for a systematic theory of post-truth. Attempts to provide a definition for post-truth are given by Brahms (2020) and Bufacchi (2021).

In the following, I refer to texts that use different concepts of post-truth. Instead of choosing a specific definition or providing one of my own, I limit myself to examining some cases that are brought up in the context of post-truth politics and focus on common properties. A central aspect of post-truth phenomena is disagreement about what counts as true and how something can be justified. In many examples, emotions rather than facts are shown to be the truth-makers. Lee

¹ “*Post-truth* is an adjective defined as ‘relating to or denoting circumstances in which objective facts are less influential in shaping public opinion than appeals to emotion and personal belief’” (Oxford Languages, n.d.a.).

McIntyre (2018, 2–4), for example, introduces the concept by quoting a 2017 CNN interview with a US-American politician, who suggests that national crime rates are high. The reporter disagrees and points out that statistics indicate low crime rates. The politician counters by claiming that people in large cities feel threatened, suggesting that the emotional attitude towards security gives a better representation of national crime rates than crime statistics. Similar examples are given by d’Ancona (2017, 23–34) and Baron (2019, 174–175).

It is not surprising that this example is used as an introduction to the subject matter, as it represents a typical case that hints at various aspects of post-truth. It expresses a loss of trust in recognised authorities: something close and familiar, e.g., feelings, is considered more trustworthy than authorities, be they experts or institutions. This goes hand in hand with other aspects of post-truth, such as accusing something of being ‘fake news’, justifications by ‘alternative facts’, and a fragmentation of the media landscape in which the influential power of established news outlets shifts to personal social media channels of public, private, or anonymous individuals. The problems that arise from this are complex: On the one hand, public discourse appears to be equally open to any assertion, and evidence-based assertions are losing out to emotional intuitions. On the other hand, social cohesion is threatened. The danger of a society falling apart is that populist tyrants have an easy time seizing power – even more so when truth and reason, which are considered corrective aids against wrong decisions, lose their power. What unites all post-truth problems is the fear of power falling into the wrong hands.

3. The origins of post-truth in philosophy

The problems I have pointed out belong to the areas of politics, media, and communication. It is noteworthy, therefore, that philosophy is often attributed to being the cause of post-truth. In (non-academic) non-fiction books, usually, some philosophical references or names from the history of philosophy are presented as origins of post-truth. For example, d’Ancona (2014) writes that when the US-American government introduced the notion ‘alternative facts’, it made use of a demotic form of “Nietzsches’s famous dictum that ‘there are no facts, only interpretations’” (14). Starting from examples that philosophically question truth, a development is then sketched that leads to what is often metaphorically referred to as a ‘war’ between truth and falsehood in the post-truth era: “There was no stable, verifiable reality – only an endless battle to define it, your ‘fact’ versus my ‘alternative fact’” (d’Ancona, 2014, 14).

Academic works provide similar accounts of the philosophical origins of post-truth. Raphael Sassower (2020, ch. 1) provides a comprehensive overview of possible connections between post-truth and the history of western philosophy. For McIntyre (2018), post-truth “roots in academic debates over the impossibility of objective truth that have been used to attack the authority of science” (14). This is to be considered in more detail, since McIntyre’s claim is not just aimed at showing similarities but also serves a purpose: As the post-truth phenomena mentioned are assessed negatively throughout, certain philosophical schools are thereby portrayed as being a bad influence and subsequently judged to be wrong. This does not concern

one particular philosophical school but several that otherwise have little to do with each other, from postmodernism to critical rationalism. The idea that post-truth emerged from postmodernism is a key premise of New Realism (cf. Ferraris, 2014), and can also be found, e.g., in McIntyre (2018), who claims that “postmodernism [is] the godfather of post-truth” (150). Schor-Tschudnowskaja and Bentka (2021, 55–69) claim that the broad acceptance of constructivism in society is related to post-truth. Arguments that critical rationalism is the origin of post-truth are less common but can be found citing Karl Popper’s falsifiability; for example in Baron (2019), who claims that “underlying the ‘fake news’ position is the respectable logic of falsifiability” (172), or in Sleigh (2021), who laments that the “notion that science is all about falsification has done incalculable damage” (13). Fuller (2018) interprets post-truth in terms of Popper’s philosophy. The next section will focus on this connection.

The proposed solution to overcome the ‘post-truth crisis’ is a return to truth (cf. Gili and Maddalena, 2022). The implicit call that is made by such a judgment is usually to give up the philosophical position that diminishes the value of truth: Since weakening truth has led to political and social crises, the value of truth should be strengthened again. Interestingly, some calls for a return to the truth *also* refer to Popper, but not as the perpetrator of the misery, but as its analyst: Parravicini (2022) calls the alleged politicisation of science during the COVID-19 pandemic – among other phenomena that are associated with post-truth – “Popper’s Nightmare” and concludes with a plea for “Bringing Truth Back” (24).¹

This shows that not one particular school of thought lies at the heart of the accusations against philosophy for being in some way responsible for post-truth, but rather the idea of abandoning truth. There are similarities between recent criticisms of philosophy for being responsible for post-truth and past criticisms of postmodern and feminist thinkers who were attacked for their criticism of authority and accused of leading society into chaos.²

4. Linking Post-Truth with Critical Rationalism: Epistemology

The main reason why critical rationalism and post-truth are supposed to fit together lies in a common approach towards truth. Thoughts on this issue are provided, for example, by Charlotte Sleigh in an opinion piece (Sleigh, 2021), which I use as a guideline to explore the links between post-truth and critical rationalism. For Sleigh, the Popperian understanding of science presumes that it does not “provide the final answer to any question, but contents itself with trying to disprove things. Science, so the Popperians claim, is an implacable machine for destroying

¹ Proponents of critical rationalism also accuse philosophers of supporting ‘post-truth’ by their theories that diminish the value of truth: Jagdish Hattiangadi (2019) blames Paul Feyerabend and Thomas Kuhn of having attacked the foundations of common knowledge that used to unite people and of having influenced the fragmentation of communities along ideological divides. This is due to the incommensurability thesis, according to Hattiangadi.

² Consider as examples the contributions of Sullivan (2005), who attacks feminist scholarship for fostering irrationalism and “thus undermining the vital role of universities as sources of knowledge essential to the functioning of modern democracies” (172), or Nanda (2005), who shows how “postmodernist critiques of science [...] threaten the advancement of civil society in India” (220).

falsehoods” (Sleigh, 2021, 7–8). The only way to achieve scientific progress, i.e., the growth of knowledge, is by rejecting a scientific hypothesis as wrong.

Among several other criticisms of Sleigh, I pick out two allegations that both regard Popper’s philosophy of science and illustrate why critical rationalism is associated with post-truth. The first criticism concerns the epistemology of science and is discussed in this section. The second regards the moral attitude of critical-rational scientists and is discussed in the next section. The first criticism is: The Popperian understanding of science gave rise to what can be called ‘naïve falsificationism’, i.e., the belief that a scientific theory can be refuted by any piece of counter-evidence (cf. Lakatos, 1970 for a discussion of this idea). The idea of naïve falsificationism is hardly found among natural scientists or philosophers of science. However, it is present in the recent ‘post-truth attacks’ against scientists coming from anti-vaccinationists who refer to, e.g., single cases of inefficient immunisation or reports of side effects, or from climate change sceptics who “seize upon a single anomalous piece of data to claim to have disproved the entire edifice of combined research” (Sleigh, 2021, 14).

A response to Sleigh was written by Jeremy Shearmur in another opinion piece, rejecting her criticisms. Shearmur (2021) points out Popper’s discussion of refutability in *The Logic of Scientific Discovery* (LScD): A theory of empirical science ought to be testable. That is, Popper demands that any empirical scientific system allows deducing empirical statements (i.e., statements that describe a logically possible and, in principle, observable event; in the systematic context of a theory, such statements are called ‘basic statements’) that can be tested and refuted by experience (cf. LScD §6). For Popper, and in critical rationalism, the concept of falsifiability amounts to more than just providing counter-examples for a given hypothesis. Falsifiability is introduced as a “criterion for the empirical character of a system of statements” (LScD §22, 66), which is, in turn, used as a criterion of demarcation between science and non-science (LScD §6); in both these senses, falsifiability only applies to the form of a system of logical statements. It should not be difficult for a given theory to check whether testable empirical statements can be derived from it or not. The methodological application of this idea, the call for falsification, is another aspect: It consists in the normative demand that scientific work attempts to disprove a theory by empirical observation. This methodological application is not a simple task, as it is not immediately clear what exactly must be met for a basic statement to be falsified or for a theory to be refuted. Falsification can be regarded as *naïve* when it is believed that a single piece of counter-evidence or the single observation of an anomaly refutes a theory. Popper’s examples of how an experiment refuted a theory may suggest that a single observation is sufficient for falsifying a theory, but this is not the case in scientific practice. He often put forward these examples just to clarify the *logical* aspect of the problem situation. Scientific experiments are conducted in a setting in which arbitrary factors are excluded as best as possible and their aim – following Popper – is to find disconfirming *effects*, i.e., basic statements to be systematically brought into a relation with a theory, and not the observation of single anomalies. Popper remarks that “a few stray basic statements contradicting a theory will hardly induce us to reject it as

falsified. We shall take it as falsified only if we discover a *reproducible effect* which refutes the theory” (LScD §22, 66). In *The Logic and Evolution of Scientific Theory* (ALPS_[1]), Popper uses the example of the missing protective effect of a vaccination in an individual to claim that neither a general biological theory of immunity nor the efficiency of a particular immunisation, such as vaccination, is refuted by this single case (cf. ALPS_[1], 17). If an observation that refutes a theory was made, it is still not clear which of the theory’s theoretical statements are refuted (cf. LScD §22, 58f.). Falsification should not only be negative and destroy hypotheses, but also provide a positive replacement. Also, it is always possible to counter objections with the help of ‘conventionalist stratagems’ (cf. LScD §19–20) or ‘immunisation strategies’, as Hans Albert calls it. Conventionalist stratagems are not what Popper proposes to choose when confronted with possible falsifications; he instead admits that “[i]t is not always simple, then, to apply the falsifiability criterion” (ALPS_[1], 17). This is not a conceptual problem of falsifiability, but a problem of its practical application (cf. LdF, *Neuer Anhang* *XIV and CR_[8], 261–271 for more on this issue). This all has to be considered as far as falsification is concerned; for an overview of the different aspects concerning the idea of falsifiability, see Gadenne (2019).

This refutes the first criticism that is brought up by Sleight (2021). However, there are two problems: Firstly, although Popper’s idea of falsifiability is far more complex than suggested by the naïve understanding of falsification, this does not stop people from referring to Popper when they bring up unsystematic observations or anomalies in order to refute a theory. But this is neither a theoretical issue nor a problem of Popper’s philosophy and thus does not need to be discussed here. A second problem does concern Popper’s philosophy: Given his radical refrain from any dogmatism (e.g., by his fallibilist attitude, his criticisms of what he calls ‘essentialism’ and of verificationism in science and epistemology, by the counter-totalitarian concept of the ‘Open Society’, etc.) and given his call for openness in science, the refutations appear to reconstruct exactly what had given rise to the objection in the first place: Falsification invites attack on (supposedly) certain knowledge. This diminishes the reliable status of, for example, the idea of climate change or the efficiency and necessity of vaccinations, as critical rationalism claims that there is no certain knowledge in empirical sciences. In other words, it leads “to the popular view that facts are only as good until the next one comes along that replaces or debunks the previous one” (Baron, 2019, 172). It seems plausible to claim that the trust in facts is undermined by the critical-rational demand to falsify scientific hypotheses.

Critical rationalism claims to be a realist position. But while realist scientists can accept theories of climate change to be true and see it as their scientific duty to find counter-measures against global warming, we might ask if critical-rational scientists regard the attempt to falsify climate change theories as the scientific approach to addressing climate issues. Realist scientists have a reason for not wasting their time with climate change denialism. Critical-rational scientists find themselves apparently in a different situation. Neil McIntyre and Popper claim that all knowledge is conjectural, that “we should be tolerant of ideas that differ from the dominant theories of the day and not wait until those theories are in trouble” (AOS_[39], 344), and that “there

can be no authorities” (AOS_[39], 343). Is defending the existence of climate change with scientific facts and referring to the scientific consensus even compatible with critical rationalism when Popper claims that those who defend a theoretical system “against criticism as long as it is not *conclusively disproved* [...] are adopting the very reverse of that critical attitude which in my view is the proper one for the scientist” (LScD §9, 28)? The link between critical rationalism and post-truth appears just to be confirmed.

A further investigation into this link is provided by Steve Fuller, who adopts a different stance and pursues a different goal: He, firstly, adopts a viewpoint of social epistemology and, secondly, considers post-truth as a condition that has always been there in the history of science. Science is, for Fuller (2000), “the systematic pursuit of knowledge” (7), and following an approach from social epistemology, the pursuit of knowledge is also a pursuit of power. Here, Fuller’s interest is directed towards the distribution of power. His approach draws attention to questions about (scientific) consensus, (science) funding and the interests of (scientific) authorities and institutions. Investigating science means examining the social-epistemic practices of peers active in science. This is not a normative analysis of science but a descriptive (namely, a sociological) one.

Given this premise, Fuller advocates an understanding of knowledge as a ‘power game’. An analysis of science in terms of social epistemology that frames knowledge as a game appears to be far away from Popper’s approach; Fuller, however, claims that it is not. He draws a direct line of intellectual descent from Popper’s philosophy to the sociology of scientific knowledge (cf. Fuller, 2018, 42) and claims that Popper’s “strategy for challenging dominant scientific theories – including his critical attitude towards the histories that legitimate those theories – aims to render science as *game-like* as possible” (Fuller, 2003, 48).

Fuller elaborated his account of Popper’s understanding of science as a game in *Kuhn vs Popper* (Fuller, 2003) in order to clarify differences between the views of Thomas Kuhn and Popper (which mainly concerns democratic participation). The notion of science as a game is picked up again in *Post-Truth* (Fuller, 2018). Popper himself is not shown to be an advocate of post-truth; instead, Fuller shows parallels between his understanding of post-truth and Popper’s philosophy.

Referring to the game character of science does not imply that irrational measures are taken. For Popper, the process of scientific research is ‘open’ and decided only by the choice of rational rules, i.e., the measures that Popper advocates for science *only* relate to the theoretical system. According to Fuller, this prevents tests from being biased towards a prevailing theory. Moreover, experiments ought to be detached from practical aspects of their implementation, such as financing: A rational decision in Popper’s science is based solely on a theory’s hypotheses and not on the associated political and economic prospects. (cf. Fuller, 2003, 48–52)

Claiming that science is like a game does not explain very much. Anything may be regarded as a game, also Kuhn’s ‘normal science’. What particularly distinguishes Popper’s ‘game-like science’ is its strong emphasis on democratisation: When Popper renders science as game-like as

possible, he also regards it as democratic as possible (cf. Fuller, 2003, 48–52). Here, ‘democratic’ does not refer to a form of governing but to the possibility of participation, unhampered by any barriers. Actions contribute to science if they are compatible with the rules of the game ‘science’. There are *no* other restrictions for Popper: neither belonging to an elite, nor wealth, not adopting a particular theory. Most importantly, a statement is not ‘scientific’ because it is ‘true’; verification is impossible and not to be aimed at. Thus, progress in science equals “‘improved gamesmanship” (Fuller, 2003, 49), and not the confirmation of theories, facts, or scientific rules.

Popper uses the game metaphor for science two times in LScD. It is used for the first time in §11 in the context of methodological rules and a second time in §85. In §11, Popper draws a distinction between the rules of pure logic and the methodological rules of empirical sciences. He claims that “[m]ethodological rules are here regarded as *conventions*. They might be described as the rules of the game of empirical science” (LScD §11, 32). He claims that empirical science is constituted by those conventions and that the rules can be altered. Just as the game of chess is defined by its rules, “empirical science may be defined by means of its methodological rules” (LScD §11, 32). The game of science is played “in principle, without end” (LScD §11, 32). It is played as long as the players are willing to call for further tests of their statements, and it ends when a player regards statements as verified (cf. LScD §11). This idea is also expressed in the second passage in which the metaphor is used: “Those among us who are unwilling to expose their ideas to the hazard of refutation do not take part in the scientific game” (LScD §85, 280).

The opportunity for philosophers dealing with post-truth is to examine how the ‘rules of the game’ are applied. Fuller distinguishes two ways of playing the game of science: An attitude in which participating in the game means accepting the given rules. He compares this attitude to the profiling of scientists in normal science, according to Kuhn. The second, post-truth attitude is characterised by the attempt to participate in the game by changing its rules. This attitude is compared to Popper’s philosophy of science. Fuller’s Popper calls “for a ‘permanent revolution’ in science” (Fuller, 2018, 6).

A power game can be considered ‘post-truth’ when certain players disrespect given rules and introduce their own. Questioning the authority of established institutions is one such step. An example is the discrediting of traditional media by introducing the term ‘mainstream media’ and the accusation that such media only follows the interests of an ‘elite’ (cf. Fuller, 2018, 3–4). Measures like fact-checkers cannot counter such a shift, as those who refer to facts play by different rules. This certainly does not lead to scientific consensus and “potentially tilts the balance towards ‘chaos’ over ‘order’” (Fuller, 2018, 181). It can, however, be understood as the “triumph of democracy over elitism” (Fuller, 2018, 181) – as it gives responsibility to those who make their own statements.

Speaking about *responsibility* shifts the focus from the epistemology of science towards its moral character. This will be discussed in the next section. Within epistemology, however, it can be plausibly asserted that central theses of critical rationalism are consistent with what Fuller presents as the post-truth condition. Fallibilism weakens the impact of knowledge claims. Put in

the words of Albert: “*all certainties in knowledge are self-made, and thus worthless for comprehending reality*” (Albert, 1985, 40). It is hard to deny the parallels between critical rationalism and post-truth with the help of epistemological objections.

One way to argue against that link, especially when referring to Popper, is to point out that rejecting erroneous ideas is regarded as an approximation to the truth. Conventional rules are not changed arbitrarily or only in respect of adjusting power relations (cf. LScD §11). Fuller does not once refer to verisimilitude or a theory’s degree of corroboration in Fuller (2003 and 2018). However, the choice to deal with verisimilitude also means addressing other problems (cf. Miller, 1994, 195–217) than what is discussed here.

I do not intend to bring forward epistemological objections against the similarities between post-truth and critical rationalism because I do not think that questions about the proximity to or distance from truth are helpful in solving problems of post-truth. Regarding the examples of climate change and the effectiveness of COVID-19 vaccination, proponents and opponents of *any* respective position invoke the truth. Both even bring forward explanations and justifications that they regard to be true. Suggesting that scientific progress can be achieved through empirical falsification is not helpful in solving the given problem of disagreement. A proposed solution to the question, if a critical-rational scientist shall defend the existence of climate change or attempt to find empirical counter-evidence, is related to the concept of responsibility, which has already been addressed by Sleight (2021), Shearmur (2021), and Fuller (2018). This approach is not exclusively related to epistemology, but also considers the moral attitude of scientists.

5. Linking Post-Truth with Critical Rationalism: Responsibility

In the previous section, I argued, largely following Fuller, that critical rationalism and post-truth coincide in renouncing the quest for certain knowledge. Fuller’s analysis concludes that the essential feature of post-truth is a renunciation of an elitist understanding of science. This renunciation is tantamount to democratisation, it can be found in critical rationalism, and it is rooted in the concept of responsibility. Critical rationalism does, of course, not call for lying or ruthless intolerance. If someone understands the rigid insistence on one’s own opinion – which may come along with accusing dissenting viewpoints as ‘fake news’ and justifications by ‘alternative facts’ – as post-truth, then critical rationalism does not resemble post-truth. However, such a rhetoric is not *post* truth, but the very core of truth: A true statement is to be defended against all other divergent statements.

The question posed at the beginning, whether a critical-rational scientist shall defend a dominant theory or attempt to falsify it, has not yet been answered. The hope now is that the critical-rational scientists’ responsibility may lead them to choose what is right.

Sleight (2021) expresses doubts about this. I now come to a second allegation of hers that concerns the moral attitude of critical-rational scientists. Sleight claims that the Popperian scientists’ work is only focused on theoretical contributions and that they do not take responsibility for the practical application of their findings. The attraction of falsification in

science thus offers “moral non-accountability to its adherents” (Sleigh, 2021, 10). Shearmur (2021) refers in his response to Popper’s 1968 text *The Moral Responsibility of the Scientist* (MF_[6]). Therein Popper writes that as science became potentially applicable, the idea that “the pure scientist or the pure scholar had only one responsibility beyond those which everyone else has – that is, to search for truth” (MF_[6], 121) became obsolete. Popper then suggests a modified and generalised version of the Hippocratic Oath that can be seen as a ‘code of conduct’ for all students of science. This oath obligates a scientist to acknowledge that “every kind of study may produce results which may affect the lives of many people,” and binds the scientist to “constantly try to foresee, and guard against, any possible danger, or possible misuse of his results, even if he does not wish to have his results applied” (MF_[6], 123).

It is clear that Sleigh’s objection falls flat. Popper demands that critical-rational scientists assume accountability for the practical uses of their findings and take full moral responsibility for their research. However, the hope hinted at earlier cannot be considered fulfilled. What happens when there is a disagreement about what it means to act responsibly? Both climate change deniers and defenders may claim that they take responsibility because they disagree about the initial problem. For a follower of climate studies, reducing emissions by, for example, imposing carbon taxes is a responsible action; for the climate change denier, preventing carbon taxes that damage the economy is a responsible action. No one would admit to acting irresponsibly; both may even invoke Popper’s altered oath. This leads again to Fuller, whose view seems to be confirmed. He claims, following Popper, that a democratic understanding of science implies tolerating and respecting others who hold divergent opinions. Disagreement is an element of the “triumph of democracy over elitism” (Fuller, 2018, 181), and it is to be preferred to a dogma that does not allow any other opinions than the one that is marked as true. This is both an element of Popper’s understanding of science and of post-truth.

Fuller’s suggestion offers an alternative model for participation in science that is open to everybody. The hope for a conflict resolution can be understood in the sense that, through their own responsibility, everyone chooses what is best for themselves. The opportunity to choose one’s own path to scientific engagement reinforces responsibility. This makes people more willing to accept scientific decisions as they consider themselves accountable for consequences. Thus, someone who holds a position that differs from a prevailing theory must not be denied access to science. (cf. Fuller, 2018, 174–180)

Not everything may meet scientific requirements – Fuller is aware that also charlatans participate in science, and liars disrupt the public political discourse (cf. Fuller, 2018, ch. 1 on Brexit) – but nevertheless, this is a model to be preferred. It overcomes an elitist understanding of science, in which knowledge is exclusively accessible to an elite with prior knowledge or the appropriate academic habitus. Free thought is only possible without a predetermined direction of thinking. The consequence of such a model is the formation of para- and pseudo-sciences like creationism or homoeopathy, which Fuller (2018) labels as “‘New Age’ science hybrids” (108)

and that subsequently lead to what Jagdish Hattiangadi (2019) calls the ‘fragmentation of knowledge’.

In this way, an answer is found to the question of scientific practice in the case of disagreement: The preferred position is the one in which more personal responsibility is taken. This answer is in line with Fuller and also compatible with Popper. However, I think that this approach misses a problem. The explanation requires a broader perspective: Fuller shows the connection between personal responsibility and the abandonment of a dominant theory using the historical example of secularisation during the Reformation. This example also occurs in Popper (CR_[19]) and, for example, in Hattiangadi (2019), who equates ‘secular thought’ with ‘free thought’. Freedom of thought existed before the advent of Christianity and Islam; it was then suppressed by religion and rediscovered by secularisation. Unlike Fuller, Hattiangadi considers free thought threatened by post-truth, but both agree on the role of the Reformation and secularisation. This is in line with Popper, who makes similar claims about how the Reformation gave responsibility to the individual (cf. CR_[19], 503).

In order to show that the moral attitude alone does not solve the problem, I refer to Albert’s idea of the ‘revelation model in epistemology’: For Albert, secularisation is not sufficient to make a significant change from an authority-bound science to a fallible understanding of a democratic, ‘open’ science. Secular science adopted elements of the supposedly overcome science from earlier epochs. In particular, secular science embraced the epistemological doctrine of revelation, which is found in religion. By ‘revelation’, Albert (1985) means the “doctrine that *truth is manifest*, that it lies open to view, and that one need merely open one’s eyes to see it” (21).¹ Truth reveals itself to truth seekers when they proceed correctly. There have been different views on how to access truth in the revelation model: The oldest probably is through a divine revelation, later through the methodology of natural philosophy (i.e., the correct application of sense perception or reason), or correct interpretation, etc. All these different approaches have in common that they facilitate groups of truth seekers who “are qualified to provide valid interpretations” (Albert, 1985, 24). Such groups endorse a particular way of accessing truth, and they may establish what Albert calls a ‘monopoly of interpretation’, i.e., a power structure that regulates who has access to knowledge, who is right, and who is wrong.

While Fuller, Hattiangadi, and Popper claim that secularisation overcomes the religious monopoly of interpretation, Albert disagrees and emphasises the continuity of the epistemological models of theology and secular science: “Modern philosophy has certainly not emancipated itself from this theological model, [...] [as] the process of knowing upon the interpretation of given statements endowed with authority” (Albert, 1985, 26). New methodologies of science that suggested, e.g., the use of reason, became substitutions for the divine revelation: “The naturalizing and democratizing of the idea of revelation in classical

¹ See CR_[0] for Popper’s discussion of the doctrine that truth is manifest.

epistemology detached knowledge from its traditional connections and made it into a revelation of *nature* by means of *reason* or the *senses*” (Albert, 1985, 28).

An illustrative example is the metaphor of the ‘book of nature’. Often Galileo’s use of the metaphor in *The Assayer* (1623) is regarded as the programmatic shift away from scholasticism and towards a mathematical approach in natural philosophy. There is a difference in tokens between learning about nature in a similar manner as one learns from the Bible and as one learns from mathematics. There is no difference in types, however. In both cases, truth is revealed to the educated reader by consulting a book of nature. Even if the book of nature were accessible to the illiterate, it would continue the tradition of the revelation model and constitute a monopoly of interpretation by those who use the book and exclude others who do not.

Albert identifies a similar continuity of epistemological models between ‘Christian science’ and the science of the Protestant Reformation. For him, Protestantism established itself in an authoritarian manner and rejected ideas of the Enlightenment: “[o]ne authority had been replaced by others of similar dogmatic function, while the authoritarian scheme of justification was still, in the end, retained: knowledge is justified through recourse to some absolutely certain authority” (Albert, 1985, 28). Whether one refers to an authority out of obedience or out of responsibility makes no difference. Only the idea of criticism can, for Albert, overcome dogmatism.

This is a valid objection against the view that secularisation led to personal responsibility and out of dogmatism. According to Fuller, abandoning a monopoly of interpretation leads to a democratic ‘science customisation’ that embraces personal responsibility. In doing so, however, he asserts precisely what Albert criticises: A large collective’s regime of truth becomes the regime of a smaller group, or even of an individual. Just because someone does not believe in a ‘truth of the elites’, it does not mean that the anti-authoritarian renunciation of elites is less dogmatic.

When Fuller (2018) claims that today’s followers of science customisation are “generally well educated and quite respectful of the need to provide reasons and evidence for their beliefs” (107), he points out that his understanding of taking personal responsibility for science-based decisions by ‘science customers’ means to provide evidence and justifications. This approach departs from the ideas of criticism and responsibility demanded by critical rationalism. For Popper, responsibility *does* play a role in science-based decisions. But, at least in applied science, this means that considerations about the moral consequences of a theory’s application should be made before theory-related decisions are taken. The question raised by Popper’s call for responsibility is whether the application of the theory will reduce the prevailing suffering of mankind.

Criticism does not demand evidence or justification. If it were a scientific authority’s purpose to decide what is true and false, then it would be rejected by critical-rational scientists. Criticism does not deny the existence of truth or knowledge but points to the conjectural character of knowledge. Critical rationalism demands a willingness to methodologically embrace criticism. In this sense, exercising epistemological modesty, accepting responsibility and a willingness to

engage with criticism, is to be a scientific authority. Doing so makes it possible to participate in the ‘game of science’ without having to make truth claims.

Are climate change deniers or anti-vaccinationists willing to engage with criticisms? It requires conviction to turn away from a dominant theory, and often, this does not prove responsibility but reveals stubbornness. In this respect, science customisation does represent democratisation, but in a negative sense: a liberation that leads into isolation. The fate of a movement that rejects all elites and experts might be a world of loners who refuse to listen to others. In the same manner, stubbornness can occur in defence of climate change: An uncritical attitude is revealed when a theory is immunised against all objections and defended as certain truth. The idea of criticism implies that one’s own thoughts should be the first object of critical examination. Such an examination requires searching for errors in the preferred theoretical position on your own, but also listening to others who offer criticism.

Critical rationalism unites fallibilism, responsibility, and the idea of criticism.¹ Both the defence of a theory and the attempt to falsify it are compatible with critical rationalism. Popper’s demand for deciding whether a theory should be defended or attempted to be falsified, cannot be detached from the original problem the theory is aimed at. If one accepts that the current environmental destruction causes harm to mankind, then it is clear that any attempts to falsify the theories of climate studies contribute nothing towards solving the environmental problems. Although this approach may be regarded as scientific, it is useless at the same time.

6. Conclusion

Critical rationalism and post-truth intersect in their common renunciation of the pursuit of certain knowledge. Critical rationalism does not share the realist belief that science is the accumulation of true statements. It states that science progresses through criticism, a method that “destroys, changes, and alters the whole thing” (CR_[4], 173–174). The alleged stability of the past is, therefore, an illusion. The history of science (and philosophy) is a battleground of competing theories and disagreements. If truth was supposed to provide stability, it ever failed to do so.

Critical rationalism and post-truth differ in the moral attitude taken towards making assumptions. Post-truth either means (a) that its proponents consider their own opinion to be true and defend it against criticisms by establishing a monopoly of interpretation or (b) an atomisation of diverging convictions. In both cases, beliefs stem from responsibility, but an uncritical attitude towards these beliefs is adopted. While (a) is Albert’s depiction of the history of science, (b) describes today’s post-truth world. The danger, in this case, is that populist tyrants have an easy time seizing power. ‘Taking responsibility’ can come in any form and may not be enough on its own to counter that danger. But there are more counter-strategies, and critical rationalism does call for them: assuming that knowledge is conjectural, being critical towards one’s own views

¹ The contributions of Noretta Koertge and Jeremy Shearmur in Parusniková and Cohen (2009) are helpful in explaining the relationships between fallibilism, responsibility, and the idea of criticism.

and those of others, not turning a blind eye to problems – also those put forward by scientific authorities –, and to reflect on the moral consequences of proposed solutions to problems.

Abbreviations

- ALPS_[1]: *The Logic and Evolution of Scientific Theory*, chapter 1 of Popper (2001), based on a 1972 radio broadcast.
- AOS_[39]: *The critical attitude in medicine: the need for a new ethics*, by Neil McIntyre and Karl Popper, chapter 39 of Popper (2001), first published in 1983.
- CR_[0]: *On the Sources of Knowledge and of Ignorance*, introduction to Popper (2002a), based on a 1960 lecture.
- CR_[4]: *Towards a Rational Theory of Tradition*, chapter 4 of Popper (2002a), based on a 1948 lecture.
- CR_[8]: *On the Status of Science and of Metaphysics*, chapter 8 of Popper (2002a), based on two 1958 radio broadcasts.
- CR_[19]: *The History of Our Time: An Optimist's View*, chapter 19 of Popper (2002a).
- LdF: Popper (2005).
- LScD: Popper (2002b).
- MF_[6]: *The Moral Responsibility of the Scientist*, chapter 6 of Popper (1994), based on a 1968 address.

References

- Albert, H. (1985). *Treatise on Critical Reason*. Princeton University Press.
- Baron, I. Z. (2019). Falsifiability, the politics of evidence, and the importance of narratives, *Critical Studies on Security*, 7(2), pp. 171–177. [10.1080/21624887.2018.1441640](https://doi.org/10.1080/21624887.2018.1441640).
- Brahms, Y. (2020). *Philosophy of Post-Truth*. Institute for National Security Studies. <https://www.inss.org.il/wp-content/uploads/2019/09/Philosophy-of-Post-Truth.pdf> (Accessed: 26 September 2022).
- Bufacchi, V. (2021). Truth, lies and tweets: A Consensus Theory of Post-Truth, *Philosophy and Social Criticism*, 47(3), pp. 347–361.
- Carlson, M. (2018). The Information Politics of Journalism in a Post-Truth Age, *Journalism Studies*, 19(13), 1879–1888. [10.1080/1461670X.2018.1494513](https://doi.org/10.1080/1461670X.2018.1494513).
- D'Ancona, M. (2017). *Post Truth*. Ebury Press.
- Ferraris, M. (2014). *Manifesto of New Realism*. State University of New York Press.
- Fuller, S. (2000). *The Governance of Science: Ideology and the Future of the Open Society*. Open University Press.
- Fuller, S. (2003). *Kuhn vs Popper*. Icon Books.
- Fuller, S. (2018). *Post-Truth. Knowledge as a Power Game*. Anthem.
- Gadenne, V. (2019). Wahrheit und Falsifikation, *Aufklärung und Kritik*, 26(1), 28–41.
- Gili, G. & Maddalena, G. (2022). After Post-Truth Communication, *European Journal of Pragmatism and American Philosophy*, 14(1). [10.4000/ejpap.2795](https://doi.org/10.4000/ejpap.2795)
- Hattiangadi, J. (2019). Fractured Knowledge: “Fake News”, in R. Sassower and N. Laor (eds.) *The Impact of Critical Rationalism. Expanding the Popperian Legacy through the Works of Ian C. Jarvie*. Palgrave Macmillan, pp. 115–128.
- Jandrić, P. (2018). Post-truth and Critical Pedagogy of Trust, in M. A. Peters, S. Rider, M. Hyvönen, & T. Besley (eds.) *Post-Truth, Fake News*. Springer, pp. 101–111.

- Lakatos, I. (1970). Falsification and the Methodology of Scientific Research Programmes, in I. Lakatos & A. Musgrave (eds.) *Criticism and the Growth of Knowledge*. Cambridge University Press, pp. 91–195.
- McIntyre, L. C. (2018). *Post-Truth*. MIT Press.
- Mika, C. T. H. & Matapo, J. (2018). The Complexity of Post-truth in Research: An Indigenous Speculation, in M. A. Peters, S. Rider, M. Hyvönen, & T. Besley (eds.) *Post-Truth, Fake News*. Springer, pp. 187–196.
- Miller, D. (1994). *Critical Rationalism. A Restatement and Defence*. Open Court.
- Nanda, M. (2005). Postmodernism, Hindu Nationalism, and “Vedic Science”, in N. Koertge (ed.) *Scientific Values and Civic Virtues*. Oxford University Press, pp. 220–235.
- Oxford Languages. (n. d. a). *Word of the Year 2016*. <https://languages.oup.com/word-of-the-year/2016/> (Accessed: 26 September 2022).
- Oxford Languages. (n. d. b). *Word of the Year: FAQs*. <https://languages.oup.com/word-of-the-year-faqs/> (Accessed: 26 September 2022).
- Parravicini, J. (2022). ‘Popper’s Nightmare’, *Organisms. Journal of Biological Sciences*, 5(2), pp. 21–25. [10.13133/2532-5876/17640](https://doi.org/10.13133/2532-5876/17640)
- Parusniková, Z. & Cohen, R. S. (eds.) (2009). *Rethinking Popper*. Springer.
- Popper, K. (1994). *The Myth of the Framework*. Edited by M. A. Notturmo. Routledge.
- Popper, K. (2001). *All Life is Problem Solving*. Routledge.
- Popper, K. (2002a). *Conjectures and Refutations*. Routledge.
- Popper, K. (2002b). *The Logic of Scientific Discovery*. Routledge.
- Popper, K. (2005). *Logik der Forschung*. 11. Auflage. Mohr Siebeck.
- Popper, K. (2008). *After the Open Society. Selected Social and Political Writings*. Edited by J. Shearmur & P. N. Turner. Routledge.
- Sassower, R. (2020). *The Spector of Hypocrisy. Testing the Limits of Moral Discourse*. Palgrave Macmillan.
- Schor-Tschudnowskaja, A. & Benetka, G. (2021). *Post-Wahrheit. Über Herkunft und Bedeutung eines modisch gewordenen Begriffs*. Neofelis.
- Shearmur, Jeremy (2021). Abusing Popper, *HPS&ST Newsletter*, pp. 6–12.
- Sleigh, Charlotte (2021). The Abuses of Popper, *HPS&ST Newsletter*, pp. 7–14.
- Sullivan, P. A. (2005). Are Postmodernist Universities and Scholarship Undermining Modern Democracy? in N. Koertge (ed.) *Scientific Values and Civic Virtues*. Oxford University Press, pp. 172–190.
- Tavernise, S. (2019). As Fake News Spreads Lies, More Readers Shrug at the Truth, in The New York Times (ed.) *Fake News: Read All About It*. The New York Times Educational Publishing, pp. 120–125.



The Experimental Philosophy or Francis Bacon's Elenchus

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ABSTRACT

Critical rationalism faces difficulty in Karl Popper's Socratic formulation: "I may be wrong, and you may be right, and by an effort, we may find the truth." But the Socratic *elenchus*, using refutations, can only give us negative knowledge of general principles, which is not the wisdom we seek. Affirmatively, we can only find a collection of opinions to be coherent, which is one of many. Francis Bacon proposed an improved elenchus to find general truths. You must take up a limited topic to study, then cross-examine your evidence for and against its apparent nature. Experiments contrary to evidence and presumed knowledge are entered as self-contradictions in tables of opposition recorded in an "experimental and natural history." Such an account highlights a challenging puzzle if the account is to be made coherent. With enough problematized evidence, a coherent reading, or a solution of the puzzle, will be unique. Being both coherent and unique, it will be the truth about that limited reality being investigated. Unlike the method of hypothesis ("Anticipating Nature"), deciphering a coherent model is "Interpreting Nature," allowing us to find a general truth on a limited topic. Isaac Newton achieved great success using Robert Boyle's mechanistic version of this method. Using the "experimental philosophy," he discovered general principles of optics and astronomy.

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I mean by an *elenchus*, a technique of refutations to produce affirmative knowledge of a principle.¹ In arithmetic, for instance, one can prove that there is no smallest rational number or largest prime number by showing that if we suppose a smallest rational or largest prime, each of these numbers would have impossible properties. The principles affirmed as negations or refutations are useful for studying arithmetic. In most cases outside mathematics, denying a principle does not yield knowledge of another useful principle. For instance, a negation of Plato's principle that heavenly bodies move in uniform circles does not generate a principle for astronomical models.

Socrates, however, claimed to have such a method (Vlastos, 1994) – an *elenchus*, we may call it, which he used, by way of refutations, to discern affirmative knowledge of ethical principles. Modestly enough, according to his admirer, Plato, he claimed he was barren of wisdom. But his cross-questioning of principles would give birth to knowledge among his interlocutors. He called this *elenchus* his art of (intellectual) midwifery.

Francis Bacon (Bacon, 2000/1620) proposed a new method of gaining knowledge. Like Socratic midwifery, he had no new science to bequeath to posterity. He bequeathed the method itself, a *new organon*, which later philosophers could use to bring new science to fruition. His *elenchus*, however, was not offered to find new principles of ethics, which were the objects of the Socratic *elenchus*. The Abrahamic religions reserve ethics to be determined by divine command, following the story of Adam's expulsion from paradise. Francis Bacon was a devout Christian and a member of the Church of England. He sought only wisdom in natural philosophy, which he hoped was far enough removed from ethical and other divine matters to keep them safe from skeptical inquiry. In natural philosophy, he proposed a skeptical method that can give us affirmative knowledge of principles.

Others have used his *elenchus* in unappreciated ways in modern natural science, which I hope to describe. Francis Bacon showed how to find new and better principles affirmatively by refutation. His method allowed modern science, with some improvements by Robert Boyle, to make breakthrough discoveries. These improvements were to introduce working hypotheses in the employment of the Baconian method, which was not foreshadowed in Francis Bacon's writing. The new method is hidden in the practice of science. We can no longer enunciate Baconian descriptions of natural science because when we try, we run afoul of some common assumptions we make about how we know whatever we know. But investigators in the natural sciences regularly find hidden knowledge of ordinary things. They do not usually state a general methodology, but they can find such new knowledge by tacitly following a version of Francis Bacon's *elenchus*.

I

Do the experts know what they confidently tell us? Could they merely seem to be knowledgeable because, being scientists, they have high social standing as experts?

¹ An *elenchus* is often understood to mean a method of refutation, which was the original meaning. Here I have restricted its meaning to include an affirmative method of refutation.

Twenty-some years ago, there was a battle of words in print and online about this issue, called “science wars.” Some scientists insisted they could find some objective truths about real things. Most of us would allow it, though we would be happier if they could describe how they acquire objective knowledge of any hidden reality.

But not everyone has agreed that scientists have such knowledge. Their critics denied that they or anyone else could know what they claimed. Invoking, among others, some well-known philosophers and historians of science such as Karl Popper, Paul Feyerabend, and Thomas Kuhn, some critics pointed out that the most general claims of science are hypotheses. They are better described as speculations, opinions, conjectures, paradigms, and even myths rather than knowledge, no matter how well they are researched. Science and Technology Studies (STS) adopted Thomas Kuhn's *Structure* (Kuhn, 1962) as the canonical description of science. However, they claimed that the practices of science and technology had yet to be filled in by their ongoing Kuhnian social research. They took Thomas Kuhn's somewhat Romantic conception of normal science (Hattiangadi, 2021) as a model for their professional organization in which dissent is barely tolerated and not encouraged.

The three influential philosophers mentioned above considered themselves friends of science, and everyone would grant that the description applies at least to Karl Popper. He avowed realism in his understanding of science, which is to say that he thought that some theories of science that try describe hidden reality might get it right. However, scientific realism is one option. Some other commentators in the “science wars” debate were belittlers of science. In STS, for instance, several practitioners ignored the objectivity of the reality that scientists invoke. They chose instead to study epistemological practices without making any realistic commitment themselves or denying it altogether. In reviewing the epistemological practices of science, they can ignore the reality of which the scientists write. However, the science and technology student may note that scientists imply or speak of truth and reality. Any such referred reality may be treated as an epistemic social construct, in which case the realistic scientist is duped.

Although it did not motivate my research, I will use the science-wars debate to frame the issues of this paper. If realistic scientists are correct, they bring us closer to reality than even their friends and admirers allow, e.g., Karl Popper. Scientists claim to learn about some truth that lies beyond their epistemological practices. How do natural scientists manage this feat? I want to address this issue to frame my paper so that it is relevant to current topics in the Philosophers of Science and to those STSers who have not pledged their troth.

Karl Popper, in 1961, described science as an ongoing critical examination of promising hypotheses. Critical rationalism is a very beguiling account of how science grows. A scientific theory may be an opinion, i.e., a conjecture. But if we subject it to severe and honest critical scrutiny in the form of empirical tests of its truth, we may find the truth we seek through Socratic dialogue. This simple account of science is an application of critical rationalism.

The form of critical rationalism he proposed, and the theory of science he advocated, do not show how affirmative knowledge of abstract principles is possible. Though Karl Popper was a

staunch supporter of science, his inability to show how affirmative knowledge is possible, in my diagnosis, is a vital part of why the STS folk went off the deep end about any objective reality. Science for critical rationalists consists of endless debate, as social theories in STS might say, which implies that there is no internal closure of any discussion. For closure, we must go beyond arguments to a social fiat if critical rationalism is to be reconciled with scientific practice. I suspect we can improve upon Karl Popper's account of critical rationalism for some cases in science, filling this cavity of reason at the center of STS.

Critical rationalists face difficulty. We can begin with Karl Popper's Socratic formulation that criticism makes humans rational. But the aim of science, he says (Popper 1961 Ch. 3.), is the truth, which is fallibly known. Plato would have concurred. However, a "Popperian *elenchus*" does not work if he has critical thinking as his only tool. The truth is not just a pile of hypotheses discarded as false because they are refuted¹. How can empirical tests perform the trick of giving us affirmative knowledge? It cannot. Every form of criticism that Karl Popper has described, including empirical falsification, can only yield negations of abstract knowledge.

Let us generalize this discussion a bit. Should my opinion contradict known facts, we can review and revise some of my adduced facts or revise my opinion. Suitably amended, my new and revised thoughts become internally coherent. That is the most critical rationalism can do for me. But it is not enough to be internally coherent².

Many alternative belief systems are each internally coherent; if not, we can make them coherent by adjusting them. There are too many alternatives in natural philosophy, each internally logically consistent. Testing each variant of each type is beyond our capability. Though each is adjusted to be internally coherent, any two belief systems will contradict one another. (If not, the coherent two can be combined into one coherent whole.) At most, one alternative can be true of many coherent collections of beliefs we may have. We have no means of finding which whole collection is true or even if we have formulated it. That would be a depressing fact of epistemology if we were seeking any wisdom.

Socrates faced such a problem, and Plato (in the *Gorgias*) showed that Socrates did not have the resources to solve it. Gregory Vlastos (1994) wrote a beautiful paper showing how Plato exhibits the Socratic difficulty in his dialogue. In later dialogues, Plato abandons further discussion of the problem of *elenctic* knowledge, having decided perhaps that he could not solve it. Beginning in *Meno* (Plato 1961), he went on to explore a new method - the method of hypothesis. Mathematicians, he wrote, state a hypothesis and, assuming it to be clear and true, use it to shed light on what follows from it without inquiring into whether it is true. They postulate its truth. Plato

¹ To be discarded is not the same thing as to be refuted, of course. Paul Feyerabend (1975) makes a strong case for retaining refuted theories as part of pluralism in science.

² By interpreting science as philosophers seeking coherence in knowledge I do not endorse a coherence theory of truth or even coherentism as an epistemology. We need to think in terms of general coherence whenever facts and hypotheses may be both in question, given the theory ladenness of facts. I am, however, assuming a version of Tarskian truth, and endorsing fallibilism about knowledge.

remained faithful to Socrates in one respect. Of all the varied principles assumed in hypothetical science, the choice of one principle as true must be made by a Socratic dialectic, wrote Plato (1961) in the *Republic*. However, he did not show how that feat was accomplished by using the Socratic dialectical *elenchus*.

If we interpret Plato's problem in modern terms, it is faced by all coherence theories of knowledge. Showing that a principle is part of our coherent web of thought is not enough to argue that it constitutes knowledge. We must also show that nothing else is coherent with all the known facts that do not entail the principle itself. If we are studying a model of reality, we need to show that the model is uniquely coherent to claim that it is true of reality. Every other construal of reality must be incoherent. It is a tall order to make that case.

Pyrrhonian skeptics (Sextus, 2000) introduced the argument of the standard of truth or the criterion. We need a criterion for true belief, for many knowledge claims exist. Proponents of any claim can formulate their standards to prefer their claims over others. We need a criterion to choose the right criterion among many. But we face a dilemma. We argue in a vicious circle if we fall back on our knowledge claims or criteria to argue for its criterion. We face infinite regress if we need to find new criteria to choose each criterion we adopt. We must do one or the other to acquire a criterion of truth¹. This way of putting it is beneficial. Recognizing that we have no criterion for truth has a benefit: we notice that we do have a criterion for falsehood.

A logical contradiction among statements is a criterion for false opinion. Critical rationalism can use logical contradictions to weed out falsehoods. The trick is to find a clever new way of using that criterion of falsehood to yield a derived criterion for truth.

Francis Bacon solved the difficulty of the Socratic *elenchus*, which he reformulated to apply to natural philosophy. Baconian induction is an *elenchus* that proceeds slightly differently: you begin small - studying the nature of a limited kind of thing. Like a skeptic, you undermine earlier hypotheses about the thing and discard them from consideration. Then you take your skepticism just a bit further.

You undermine the facts themselves - what you think you know about the nature of the thing under study. You create *experimental* difficulties for the appearances (*observations*) of the nature of the item². Problematizing evidence is the main task of the new experimental method. You find experiments that undermine ascertained observations and other evidence of its nature. Then you

¹ The Pyrrhonists of course do not assent either that there is or there is not a standard for truth (Empiricus, 2000 Bk. II.) The criterion of knowledge was widely discussed in France when Francis Bacon was in Paris as a young cryptographer employed by the diplomat, Amyas Paulet who represented Elizabeth I. It has seemed to me a natural way for Francis Bacon to alight upon his *elenchus*, which he seemed to have grasped in outline before his return to England. However, I have not found evidence of this argument pattern in any of his writings.

² In 1998, Brian Baigirie, returning from a research trip to study Isaac Newton's papers in Cambridge, said that he saw so many bins of papers entitled "Observations and Experiments" that he wondered why they mentioned both together so often in that period. I was at the time wondering why Albert Einstein kept deferring to Niels Bohr's interpretation of quantum mechanics as the best account of the *experiments*. This did not make sense, for different interpretations of the same equations should be regarded as empirically equivalent, what was it about experiments, I wondered, that is missing in observation? Brian, thus, got me started on a renewed study of Isaac Newton, Robert Boyle, Francis Bacon, and Plato's Socrates, as I went backwards in time.

write up your evidence and its difficulties – it is now all evidence – in a daily record or a journal. It would be best to record all the facts that have been ascertained and problematized. Robert Boyle updated the Baconian method and called his version the “experimental philosophy.”

The important Baconian proviso is this: your experiments should be designed to yield results contrary to your current evidence and (apparent) knowledge. The experimental results must be surprising to be notable. You jot down these evidential discrepancies in a journal just as they are found - that is to say, without trying to resolve, clarify, or improve each discrepancy right away. When an account is written up in this manner (Bacon, 2000/1620), he calls it an “experimental and natural history.” It is how a thing’s nature appears to you after cross-examination by experiment. Experimentally interrogating existing evidence is like Socratic questioning. The learned journal is a record, like the notes taken by a court clerk of the deposition, oral testimony, and cross-examination of witnesses.

Francis Bacon’s natural history was of a peculiar kind. Collecting *errors* seems strange for a philosopher interested in some *truth* about what is *real*. Those italicized words seem not to belong together. But the histories of our assembled errors confer us a benefit. The assembled problems create a complex puzzle about reality. However, an experimental history can do this only after you have collected enough problematic evidence. Only after the puzzle has become almost unmanageably complex should you begin to ask yourself: “what can be the case about the thing in focus that appears in all these puzzling ways exactly as it does?”

If you are lucky, you can then construct a schematism or a model in which the errors are dissipated. Your model must answer your question, “what model of the thing studied fits all the discrepancies of this experimental and natural history?” Any answer is a bit of metaphysics - a small part of a future account of reality. Asking the question thus is much more restrictive than some older metaphysical questions like, “What is reality, ultimately? Is it one or many? Is it mathematical or qualitative?” and so on. Instead, you try to solve a puzzle that is modest in scope. Even with that modesty, it isn’t easy to recognize and solve an assembled puzzle in modern science. When you succeed, other scientists honor you as outstanding among peers. It takes dedication, imagination, skill, and a hefty dose of luck.

The puzzle you set yourself does not all have to be your work. If you are lucky, others may have prepared your experimental and natural history for you. Modern science has become more communal, where one group can sometimes produce all the experimental examination of a thing. In contrast, another group exclusively concentrates on theory, given the state of experiments. Of course, such dual groups may have some common members, but they need not have any. Baconian science is unlike the older philosophies of past millennia when each philosopher contemplated reality in solitude, like Auguste Rodin’s *Thinker*.

A fully developed puzzle, whoever produces it, can barely be solved. If it is easily solved, particularly if it is easily solved in many ways, then we have not been diligent enough in assembling the experimental and natural history. The task of theorizing is premature at this stage. Your solution will be difficult to find if you have enough problematized evidence. Its difficulty is tied to its

uniqueness. No other model of the thing under study will fit the quirky features of its natural history. Remember, you have cross-examined nature skeptically. When your model is coherent and unique, you have knowledge that can withstand intense skeptical scrutiny. That is why it is reasonable to call it "skeptical knowledge." Such knowledge is stable when a unique solution is found because it withstands all current skeptical scrutiny.

Skepticism about facts generates the strange errors reported in an experimental and natural history, using which we can discover the underlying nature of the thing you and I were seeking. Your new model is a true depiction of the underlying reality because A) it is coherent and B) it is a unique solution to a skeptically produced puzzle. Here is the criterion we sought. It is a modern version of the Socratic *elenchus*, which solves Plato's problem with its uniqueness, which he addressed but did not solve (Vlastos, 1994) in the *Gorgias*.

A uniquely coherent system of belief constitutes knowledge. Its criterion is the criterion of falsity, namely internal incoherence, applied in a new but skeptical way to generate truth.

The task of skeptical science is to get beyond appearances to a deeper level of reality, to the underlying or latent cause of things. Such a skeptical technique transports you beyond or behind appearances precisely because you have problematized the phenomena. Appearances cannot be left in their problematized state when we solve the puzzle: they must be made coherent by minor revisions. They must be normalized or modified to become coherent while remaining factual. You must go beyond the evidence as formerly understood to normalize it. There is no other way to do this than to break through the appearances to a deeper reality.

When you find a cause of whatever you are investigating, that cause will constitute a breakthrough. Francis Bacon (Bacon, 2000/1620) provided the theory of how to break through to the causes of things in his *New Organon*. But he did not apply his skeptical method to produce any breakthrough knowledge or science that his *elenchus* promised. Isaac Newton displayed the craft of skeptical ability in all its facets. He also made some contributions of his own to the craft. For that reason, it is appropriately called the "Newtonian Method" or "The Scientific Method."

II

Soon after its founding in 1662, the Royal Society of London began encouraging and recording skeptical or experimental natural histories. Robert Boyle updated Francis Bacon's recommendations and undertook its exposition and application. There were many experimental philosophers among the early members. Robert Boyle was particularly prominent as a supporter and expositor of the modified Baconian method. He provided funds for constructing expensive instruments and recorded and published detailed experimental histories in different parts of natural philosophy. The two most remarkable applications of the experimental method, which led to breakthroughs, were proposed by Isaac Newton a bit later. Before his contributions, many intriguing experimental natural histories were produced, but they seemed to lack direction. He first applied the new method of the "interpretation of nature" to the accumulated puzzle of optical

phenomena in 1672 and fourteen years later to those of astronomy (though the latter claim, which he made, is rarely supported. and needs showing.)

I have briefly sketched Isaac Newton's theory of light and colors of 1672 in a chapter of an unpublished book manuscript, but even that brief sketch is too long to repeat here. If I may be allowed to introduce a sketch of that sketch, I can show how he "interpreted nature" (Bacon, 2000/1620, Aphorism XXVI) to solve a puzzle about light. It is helpful for a critical rationalist to see an *elenchus* in operation if I may take myself as an example of someone who benefited from this help.

In his letter to Henry Oldenburg (Newton, 1672), he reported that light passing through a prism projected an image with an impossible appearance. He arranged for sunlight to pass through a small circular hole in a screen that blocked all other light to his room. The image of light from a circular hole should also be circular when the prism and screen are appropriately arranged. But the image appeared oblong on the screen though the experiment was carefully performed. That impossible elongated image is what he investigated and reported in his letter about colors. I emphasize that he was not, to begin with, studying colors. He was examining an error in our apparent knowledge. The theory of colors is his breakthrough that solves the puzzle about colors in which he found recorded many other discrepancies.

An oblong image from a circular source of light contradicts the laws of geometry when combined with the sine law of refraction, the rectilinear propagation of light (and perhaps a few other assumptions.) What causes the anomaly?

He considered the possibility that sunlight is not uniform. Light from different parts of the sun could vary, causing a distorted image. By rotating the prism around its long axis slightly and slowly and comparing the images produced at each slight turn, he ascertained that the sunlight was uniform – there was no change in the form of the image. He considered the possibility that the prism was flawed, causing the distortion. But when he took a second identical prism and placed it against the first, but upside down, he found that the image produced was a circular beam of sunlight. No flaw in the prismatic lens was distorting the image. He considered many hypotheses and ingeniously showed that none of them could explain the discrepancy. For instance, could the light travel in a curve after leaving the prism? By varying the screen's distance intercepting light out of the prism, he found by tracking the size and shape of the image that the light beam is traveling straight.

He measured the length and breadth of the image on the screen as accurately as he could. He calculated that the sine law of refraction predicted the image's width. But the height of the image was several times too large. Why was there an elongation in that one dimension? Moreover, the height was peculiar because its top and bottom were semicircular and not distorted by elongation. The elongation also displayed the colors of the rainbow. Isaac Newton began to suspect that perhaps colors may be implicated here.

This thought brought him good results. When he held up a screen with a hole isolating a color in the image in the light beam's path, he found each pure, color had a circular image. Moreover, a prism in the path of the color did not elongate its image. Each color was refracted at the prism as

predicted by the sine law. A circular hole projected a circular image. But each color refracted at a slightly different angle. The color images were superimposed partially on one another in the elongated image to produce its strange shape.

Until Isaac Newton's letter was published, theorists supposed that color was a modification of white sunlight by media. Sunlight was new and pure light, a general assumption in optics. René Descartes had proposed a model with this tacit but commonly made assumption. He had compared sunlight to a rubber ball, which would acquire a twist when it hits a hard surface like the ground. The resistance offered to one of the ball's surfaces would cause its twist: the surface impeded by the ground would slow down, while all other surfaces would move freely forward. The ball would acquire top spin. When the retina feels the twist (i.e., felt by the optic nerve attached to its rear), it registers as a color. He used this model of color, the sine law of refraction, and the measured refractive indices of air and water, to give a very detailed and impressive theory of the rainbow. It is an ingenious account with a magnificent explanation of the rainbow we see in the sky. Isaac Newton admired Cartesian optics, which he had studied with Isaac Barrow with great interest.

Isaac Newton knew in 1672 that colored light is not modified white light. His discovery was, in this sense, a breakthrough. White light is a mixture of colors, simple as sunlight appears to us everywhere, while colors are original (or intrinsic) properties of light. Note the breakthrough he made about the complex reality beyond the appearance of simple sunlight. It appears white, but it is a mixture of colors. The prismatic glass lens does not manufacture colors like a foundry; it merely sorts and dispatches each color to its proper address, like a post office. The discovery of a hidden cause is a characteristic feature of the Baconian method of true induction. It is designed to find the "true" (faithfully represented) measure of reality rather than imposing a measure of our mind (a hypothesis) upon reality.

Light of different colors refracts at slightly different angles, creating the strange image he was studying. As a Baconian, Isaac Newton knew he had to show how this knowledge gave him "power over nature," in Francis Bacon's words (2000/1620), which is a "pledge of its truth." Isaac Newton painstakingly measured the relative proportions of the different colors in the spectrum. He constructed a circular disc with that same proportion of colors arranged radially on it. Pure white light emerged by spinning the multicolored disc on a wheel¹. He could show experimentally that the great René Descartes was wrong - color is an original property of light, white light is a mixture of the original colors, and colors vary in their refrangibility.

I have summarized this bit of Newtoniana, perhaps none too well, to make a particular point. If you look carefully at my account of his method, however poor it may be, it is very much the way Karl Popper described science. Isaac Newton took up a problem, namely, the impossible oblong image. Then he entertained one hypothesis after another to solve the problem until he found one that did. Each hypothesis is refuted by an ascertained fact leading Isaac Newton to seek another

¹ In the interest of brevity, I have neglected this important feature of Baconian method. It should be noted that Isaac Newton had produced and donated to the Royal Society of London a reflecting telescope. His explanation of colors.

hypothesis. Is this not the method of conjecture and refutation? Isaac Newton's ingenuity shines through in the hypotheses he considers and, even more, in the ingenuity of his tests. For all that, his method seems to be just an application of the method of hypothesis. When he solves the main problem, he does so (eventually) with a bold conjecture. Is this not critical rationalism at its best, and exactly how it applies to empirical science?

Indeed, it is. Isaac Newton's experimental method is an excellent example of critical rationalism, of that special critical rationalism that Karl Popper called "Science: Conjectures and Refutations." (Popper, 1961 Ch. 1) But it is also something else. It is an *elenchus*: it provides an affirmative theory of colors by relying on a process of refutation.

When a hypothesis is refuted, it is not enough to honestly accept its failure, though, of course, Karl Popper was right – you must not explain it away, for then you may have only your prejudice left to admire. When we see the impossibly oblong image, we can conclude that the sine law of refraction is refuted. Or that geometry fails us. Or that light does not always travel in a straight line. Or that the instrument used was faulty. And so on. Given the postulates of geometry, the sine law of refraction, the rectilinear motion of light, and other similar assumptions, the image should have been circular. And it is not. Ergo, we stand refuted. We must replace an assumption, but we do not know which. We need bold conjectures.

We note that Isaac Newton's discovery that light is a mixture of colors does a lot. It dissolves the paradox of the impossible image. It also explains all the peculiar facts he recorded about how the image is formed. It also explains a whole host of other discrepancies about light that were reported earlier by Robert Hooke and Robert Boyle. Each of these problems is an apparent impossibility, ripe for resolution. Isaac Newton's letter on colors shows how all those strange phenomena can now be explained and normalized at once.

Take, for instance, Robert Hooke's two glass flasks of colored water. If light from a single aperture in a screen enters a room and we let it pass through a glass flask filled with an intense red liquid, the room will be infused with red light. If we use a flask filled with a blue liquid, we will see it infused with blue. But what color do we get if we put them in tandem to filter the light together? We expect the red light to be modified by a blue tinge to yield a purple color. But that is not what happens. The two flasks in tandem become opaque. Light ceases to enter a room with red and blue filtering.

If we take Robert Hooke's experiment by itself, we may be tempted to think that the colors blue and red are special to understanding light. What might their hidden connection be? Once we take all the problematic phenomena together, we see how Isaac Newton's principle of mixtures fits all the troubling facts, including this. In the case of Robert Hooke's flasks, a red liquid transmits red rays of light but filters out (reflects) all other colored rays intermixed in sunlight, including the blue. The blue liquid, however, filters out all other light rays except the blue. Hence, the red and blue filters in tandem block out all light. Isaac Newton's application of the *elenchus* resolved several such anomalies of colors. Not only could the model of white light explain strange color phenomena that Robert Hooke and Robert Boyle listed, but also his own additions to the

experimental history. His model of white light could solve the puzzle of the anomalous color phenomena on record.

When we examine the experiments reported by Isaac Newton in his 1672 letter on color, we can certainly read them as a series of conjectures and refutations, which they are. But they are also his additional entries into light's experimental and natural history. In one way, this account illustrates that Isaac Newton would have been a critical rationalist - a philosopher who refuted his own serial conjectures with glee. But if we are too flushed with the pleasure of finding a fellow critical rationalist in Isaac Newton, we miss the point. He was secondly also an experimental philosopher. He was applying Francis Bacon's skeptical method of induction.

Three hundred and fifty years after his letter to the Royal Society of London, the Newtonian claim that white light is a mixture of colors is still accepted as knowledge. Much has changed, but this discovery remains. Why is it stable knowledge? I suggest that the answer is not found in critical rationalism. Hypotheses need not be stable knowledge. It is stable for a different reason: it is uniquely coherent. It is the only account that works of some particularly problematized facts.

Karl Popper missed something in his methodological remarks: we should not try to solve problems serially. We need to exercise patience. It is too easy to stray from reality if we address problems one by one. A single refutation is easy to evade. We can defend any theory from recalcitrant experience, come what may¹. Therefore, the best method is not to proceed impatiently with conjectures and refutations. Instead, we collect refutations patiently in some small domain until they form an insoluble puzzle. Then we solve all the problems together, as one puzzle. No one is tempted to return to the assembled chaos of earlier problems. When skeptically assembled anomalies are solved at once, they stay solved. Opponents find it hard to go back even when they find that their pet theories have been abandoned.

Isaac Newton's induction was not prescient. He got some things wrong about white light, too. He had asserted that white light is a mixture of the colors of the rainbow in the same proportion as in sunlight. His demonstration of spinning the many-colored wheel had produced pure white light. Moreover, if one color on the wheel were blocked, then rotating it did not produce pure white light. So white light is a mixture of the colors of the rainbow in their natural proportion, which he had so carefully measured. But he was mistaken about that. Christiaan Huygens soon showed him that white light can also be generated by mixing only a few of the colors, provided they are correctly balanced. Isaac Newton had made a subtle error. He had assumed that because the colors of the rainbow produced white light when mixed in due proportion and not when that ratio is varied, that white light is essentially that proportion by mixture.

Nor is the experimental method itself infallible. His model of gravity, proposed a decade later, also solved a large set of problems, though the problems were developed by disputes and

¹ I am referring here to Willard Van Quine, who claimed, "Any statement can be held true, come what may, if we are willing to make drastic enough adjustments elsewhere in the system." (Quine, 1952). I am particularly pleased that I have found out why science does not bear out his highly regarded claim.

disagreements and not by any Baconian intent. But that celebrated solved puzzle was later corrected by general relativity.

III

Isaac Newton did not follow the experimental method thoughtlessly. He was a skillful intellectual craftsman who extended the method of experimental philosophy beyond its earlier formulation. In the Preface to the first edition of his *Mathematical Principles of Natural Philosophy* (the *Principia*, 1934/1686), he reported his method in that writing as consisting of two steps. "...[B]y the propositions mathematically demonstrated in the former Books, in the third I derive from the celestial phenomena the forces of gravity with which bodies tend to the sun and the several planets. Then from these forces, by other forces which are also mathematical, I deduce the motion of the planets, the comets, the moon and the sea." In other places, he called these two steps a special induction and a general induction. The division applies to his letter on colors, too. I would redescribe the two steps as *model building* and *Baconian induction*.

It has not often been noted that the *Principia* is a biographic report of his astrophysical research. In many ways, it resembles his biographic report of his optical research in 1762, though it also differs in three respects, as I note below. His astrophysics is a much more formidable mathematical exercise. Commentators who expect his insights were only mathematical have been puzzled when he reminds us in the second edition of the *Principia* that his books are a species of experimental philosophy.

His model building based on a mathematical discrepancy is the first biographic step in each report. He builds a model of simple light as a hidden mixture in one case. In the other case, in Book III of the *Principia*, he reveals a hidden force of gravit. Some of Isaac Newton's remarks about his method are appropriate as they relate to his model, but not to what he calls "general induction," – that is to say, not to his application of the Baconian method. In the General Scholium added to the second edition he says that he "deduced" gravity from the phenomena. And he did. But he did not deduce gravity from the phenomena alone! He used the mathematical model's resources, including the laws of motion, to deduce gravity from the phenomena. There is nothing logically odd about that deduction.

His optics and astronomy are similar exercises in model building, though with three differences. First, there is this obvious difference. The first book of the *Principia* is a remarkable feat of mathematics, whereas the letter on colors is an example of a careful skeptical investigation of phenomena. It has tempted some to suppose that his secret of success in the *Principia* was his mathematics. But he also solved an intractable puzzle of astronomy in Book III, so it was not all in the mathematics.

Another difference is that his optical report begins with the central anomaly, the impossibly elongated image. The *Principia* is different because the anomaly comes last in his report: an impossible path for each of two comets. He seriously investigated the System of the World only after encountering the strange comets of 1680 and 1682. The comets exhibited impossible orbital

paths in a Cartesian plenum. In a plenum, every motion must be in a closed curve. But if we trace the vortices that carry the planets, the comets were on impossible paths going across and against the established vortices. He was led to a model in which they move in empty space, propelled not by vortices but by a strange new force – an action at a distance.

In the *Principia*, however, he described the bizarre orbits of the comets only at the very end of his report in Book III. Although the order of presentation was reversed, his reports were similar in other respects. His letter of 1672 was a theory of an impossible image, which also unexpectedly solved the puzzle of the colors. His *Principia* is a theory of comets with impossible orbits. There was no theory of comets to speak of then. His new cometary model unexpectedly solved the great puzzle of 17th-century astronomy concerning all the planets, the sun, the sea, and the moon. For that last reason, we could allow him to call his *Principia* an exercise in experimental philosophy.

A third difference was his role in making up the puzzle. In his optics, he contributed some additional problems to the puzzle. The *Principia* was different. Comets apart, he found a complete puzzle ready-made. That great puzzle of astronomy, which he solved, was found in the contentious disputes about astronomy between the scholastics, and Tychonians, Keplerians, Galileans, Cartesians, Gassendians, Horrockians, and others. By questioning each other, they had unwittingly created the kind of puzzle that Francis Bacon had recommended. But the disputants had not done so knowingly by adopting a Baconian methodology. Skeptical knowledge may well predate Francis Bacon's recommendations. Skeptical inquiry into phenomena and puzzle-solving could have happened in the natural course of thought before the Royal Society of London adopted the experimental philosophy. The Royal Society therefore only accelerated the growth of knowledge and did not invent it.

Isaac Newton did make an outstanding contribution to methodology. He showed by example how to build a complex model of a bit of reality in experimental philosophy. No earlier Baconian had paid attention to this feature of the craft of a natural philosopher. Isaac Newton worked on his models' details very carefully and methodically. He paid attention to detailed facts, wallowing in the particulars where the discrepancies are often found. He reported them to the public only after his surprising model of the puzzling phenomenon solved many other problems of the experimental history. I suspect all the great breakthroughs in subsequent natural science have exhibited this feature of Newtonian craft. Emulating the great Isaac Newton, every breakthrough in later modern science has begun with a careful and systematic examination of details of experimental phenomena to yield a surprising model. Then the model conquers all or, usually, almost all.

IV

A difficulty in my account of science will occur to you straight away. I have claimed that a carefully built model and an elenchus were used to gain knowledge – to produce science – repeatedly for three hundred and fifty years. Moreover, I have argued (1) that Francis Bacon stated the method. (2) It was understood early in the Royal Society of London. (3) In particular, Robert Boyle understood it well enough to reform it. (4) He also illustrated it copiously with Baconian

experimental and natural histories. (5) Isaac Newton inspired later philosophers with this new method. (6) I have also claimed that he used the new experimental philosophy to develop his theory of light and his theory of universal gravitation, which were widely admired and intensively studied.

Why does nobody detect or describe this method today? Why does no one see it in broad daylight?

When we try to find a star during daylight, we cannot see it. The bright sun drowns out a faint star in the sky. The Newtonian method was drowned out by the bright light of a sun that arose almost simultaneously – namely, John Locke’s (1975/1688) essay on the limits of human understanding, in which knowledge claimed about a religious faith was off limits. Compared to that sun, the starlight of a poorly described method was drowned. That is my reading of events¹. Newtonian science has been much appreciated and emulated all over the world. But his experimental method is invisible and all but forgotten. We are so dazzled by the doctrine of sensory empiricism that we have assumed that the method used by scientists must satisfy empiricist criteria. Skeptical examinations of empirical facts cannot be stated coherently within empiricist limits.

Empiricism was the critical doctrine underpinning John Locke’s recipe for liberal democracy in England. He proposed that secular knowledge, founded securely in sense experience and reason, can be used by a magistrate in dispensing justice for all. Differences in our religious faith, however, must be respected. They are most important to a faithful person, but they cannot be known to be true or false in secular science. Hence liberal democracy should not outlaw any genuine faith. A democracy that allowed freedom of religion, such as the Glorious Revolution of 1688, brought a measure of doctrinal peace between rival faiths. In retrospect, we may see flaws in that revolution, for it did not allow Roman Catholics or atheists to hold public office. But it was still a beacon of hope for peace in beleaguered Europe. Later versions inspired by John Locke’s arguments had a benign effect wherever similar liberalism was adopted, whatever their defects. But the promise of peace was a great lure, though it was had at a cost. We had to accept a theory of knowledge that claimed that sensory inputs (i.e., any observations) and rational thought (i.e., logic and mathematics, including probability) generated secular and universal knowledge, such as science. Its universal acknowledgment as science demarcated it from a sectarian faith, which cannot be derived from sensory experience and reason.

No foundational sense experience can be riddled with skeptically generated paradoxes. Paradoxes are at the heart of the Baconian method. Consequently, it could not be stated coherently within empiricism. Methodology, however, is a small cost to pay for doctrinal peace. John Locke’s empiricism replaced Francis Bacon’s skeptical method. However, flawed the Liberal sun may have been, it shone so brightly that the Baconian star was invisible. Being an early empiricist and

¹ *The Pax Empirica, and the Hidden Method*, is a second unpublished book of mine, describing mostly the *Principia* as an exercise of an affirmative *elenchus*, or experimental philosophy. I also touch upon John Locke’s doctrinal peace based on the limits of understanding, which co-opted Newtonian method within empiricism, making it impossible to state coherently.

securing the *Pax Empirica* became a great honor to confer upon any modern philosopher. As a consolation prize, we have conferred honorary empiricism upon a reluctant Francis Bacon¹.

David Hume (1977/1748) showed, on empiricist grounds, that we cannot know any hidden causes of events precisely because they are hidden and not given in sense experience. All that we can observe are constant conjunctions of sensible events. Hidden causes cannot be derived from them logically because one would not contradict oneself by denying them. Moreover, we can have no predictive science or inductive knowledge by reasoning only from sense impressions using logic. Our record of experience is of the past. We cannot deduce from the past that the future will be like the past. Empiricism supports a different kind of skepticism that David Hume advocated – a doubt concerning reasons.

The obvious response to David Hume's arguments is to abandon John Locke's empiricism. It is not a necessary condition of knowledge. We should not be tempted to conclude on empiricist grounds that we have made no scientific breakthroughs, or that skepticism is alien to collecting evidence. There is too much evidence to the contrary. But few have so decided and gone on to study the Baconian *elenchus*.

The long hegemony of empiricist thought has influenced the scientific method. A form of foundational and empiricist thinking is also valuable for modern science. I need to fill in a bit of history to describe that benign influence. Skeptical knowledge flourished in nineteenth-century physics and chemistry, though clandestinely hidden among the many useful and influential hypotheses of significance in that period. Many overlapping and applicable new scientific models of ordinary things around us also arose. Each model would become increasingly better as time went on by recalibration from within - by better measurement, improved instrumentation, and better mutual support of internal theories. The models could also help calibrate each other wherever there was overlap. An extraordinary density of knowledge came to exist. The increasing density of knowledge was widely noticed because the models were also valuable in their practical application to ordinary things around us. Nature became more habitable. The world was becoming more artificial by the decade. A similar density of knowledge was achieved in the medical sciences later in the nineteenth century and decades after. Life expectancy improved.

Applying new knowledge suitably and safely in engineering or medicine became important. To avoid regret, we examine our foundations and cleanse them of error, as best we can, using a quasi-empiricist method. We cannot, of course, ask everything to be reduced to sense impressions. That is not feasible. Suppose we find an acceptable level of social trust in some form of observed data. We can then refine such quasi-empirical data to minimize error and use it as a basis to examine (quasi-empirically) the suitability and safety of applying new science. We have here the reverse of

¹ Francis Bacon (2000/1620) explicitly criticizes empiricism as inadequate in many different aphorisms, such as Book I, LXIV and XCV, but he is not consistently anti-empiricist. In Aphorism I Book I he seems to suggest that when he wrote it, he had a generally empiricist perspective, much like Aristotle. "Man is Nature's agent and interpreter; he does and understands only as much as he has observed of the order of nature in fact or by inference; he does not know and cannot do more." I suspect that early on he began as an empiricist, following Aristotle, and as he developed his thought as an experimental philosopher, he found he had to abandon many early assumptions, empiricism being one.

the *elenchus*, where we amplified errors to discover puzzles. One example will show how the two methods compare – the skeptical and the empiricist.

In the recent Covid-19 pandemic, it was determined that the infection was a virus. A couple of weeks later, it was announced that it was an RNA virus with characteristic proteins. It was fully decoded. A vaccine was very soon developed because new skeptical knowledge can give us new power over nature. New M-RNA vaccines could not be given to healthy people without checking whether the vaccine would be effective or had unacceptably harmful side effects. Consequently, we had to wait for trials on large numbers of volunteers before the vaccines were available.

The virus's decoding and the vaccine's safety and efficacy employ different methods at work. Decoding the virus used a well-developed model of heredity. An RNA vaccine was formulated using a recent enhancement of the model, which combined many earlier breakthroughs. Elements of the model were learned skeptically – they could not have been learned empirically, as David Hume showed us: Viruses are hidden causes of infection.

But evaluating the efficacy and safety of A vaccine is a different matter. We ask: How many volunteers were tested at its trials? How varied was their demographic composition? How carefully were the tests conducted? And so on. These are all quasi-empiricist criteria in which we seek to avoid errors. We need secure knowledge of the efficacy and safety of the vaccine. We would not ask such questions about the causal analysis of the virus. (E.g., “how many thousand viruses have they studied since it was discovered, and how variable are they?” is not a relevant question.) Each method is useful to its task. We err if we demand that skeptical knowledge meet quasi-empiricist criteria, which it cannot. Nor should we deny any knowledge based on probability and a reasonable quasi-empiricist basis (e.g., human-engendered climate change) because it was not skeptically produced.

Some more difficulties for my claims arise from their underappreciation, but one is genuine. Empiricists, adopting a hypothetico-deductive interpretation of modern science, expect to find rules of method that determine theory choice. But such an expectation does not carry over to the Baconian way. If you collect enough problems on a small enough topic, you no longer need to adopt rules to choose a theory. Problems, being self-contradictory, demand solutions as they are, as opposed to empirical facts that demand nothing of us. Problems by themselves may provide a *methodology without adopting methodological rules*¹. My phrase may have fallen by the wayside. Marco Giunti (1988) was alone among my critics to appreciate the value of a fully problem-based methodology if developed. However, he pointed out correctly that my attempts were incomplete and flawed². Francis Bacon's method escapes his criticism. While a particular problem may allow multiple solutions, each being adequate to its task, numerous problems taken together could refute one another's solution until only a single solution remains free of paradox. In a Baconian puzzle,

¹ In my (1983) “A Methodology without Methodological Rules,” I did not appreciate the importance of waiting and not rushing to judgment. This allows me to claim for Francis Bacon's interpretations of nature unique coherence and therefore knowledge.

² Marco Giunti showed that my theory was incomplete, which I accept, but I did not see how to complete it until I began to understand Francis Bacon's experimental and natural history.

methodological rules need not be adopted but arise out of the puzzle. Let us look at a test case. How can a nest of problems obviate the need for adopting a methodological rule against *ad hoc* hypotheses?

When Isaac Newton died, he knew that he had solved the Baconian puzzle of post-Copernican astronomy, but for one blemish, to which we will soon turn. Every complete model of the system of the world before the *Principia* was challenged on all sides. Isaac Newton was able to solve the almost intractable puzzle created by disputes and disagreements among astronomers (e.g., Nicholas Copernicus, Tycho Brahe, Johannes Kepler, Jeremiah Horrocks, Christopher Wren), and the mechanists (e.g., Galileo Galilei, Evangelista Torricelli, René Descartes, Pierre Gassendi, Christiaan Huygens.) None of them had taken up Francis Bacon's philosophy to follow, of course. Still, together they had inadvertently created the paradoxes that the experimental philosophy demands of us. Isaac Newton brought forth coherence with a complete solution. In doing so, he responded to an "experimental" or disputed reading of facts and analyses, and in this sense, his solution to the puzzle was a conclusion in experimental philosophy¹.

Isaac Newton had solved one by one more than half a dozen inequalities in the moon's orbit, or inexplicable but recurring deviations. He had also solved one by one many other inequalities: the precession of the equinoxes, the planetary orbits of Jupiter, the planetary orbits around the sun, the unruly tides of the sea, the strange shape of the earth, and the vagaries of pendulums at different latitudes on the earth. The coherence that smoothed out all the known paradoxes came from a single model developed to describe comets. No astronomical model before had enjoyed such success. But one inequality of the moon remained unsolved: The moon's orbit was retarded by a tiny bit each month, which retardation, in about eighteen years, would cycle back to a given orbit. Isaac Newton could explain some retardation and even the shape of the orbital inequality. But when calculated from gravity, the moon should complete the cycle in about nine years, not the observed eighteen. Isaac Newton struggled with this numeric defect in his model during the latter part of his life.

The inequality was solved twenty years after his death by combining two changes in his model. Daniel Bernoulli published a better Newtonian theory of tides based on superior tidal estimates, in which he revised the center of gravity of the earth-moon system. This change accounted for more than half the lunar inequality that had beset the Newtonian model. Alexis Clairaut, a brilliant young mathematician who understood the Newtonian model well, accounted for the rest of the shortfall by showing that Isaac Newton had made a mathematical error. He calculated the inequality by considering each of the three dimensions at a time and adding their effect. But he had not calculated the effect along one of the dimensions, judging it negligible. It was not.

Our interest is in what happened before the problem was solved. Alexis Clairaut first published a result showing that the inequality of the moon can be resolved if we modify the law of gravity. He published a modification of the force formula, which is inversely proportional to the square of

¹ In the General Scholium found in the second edition of the *Principia*, Isaac Newton uses the phrase to describe his effort, but most commentary on his method regards this claim as merely polemic excess on his part in response to critiques of his model. I interpret his work as an example of experimental philosophy in my *Pax Empirica*, op.cit. fn. viii.

the distance between two bodies, by adding to the inverse the fourth power of the distance. The revised force law explained the known retardation of the moon's orbit quite well. He did better than Isaac Newton on that inequality. George-Louis LeClerc, or Comte de Buffon (better known as a naturalist and forerunner of theories of the evolution of life), promptly criticized the amended law as inadequate. He pointed out that gravity was used in multiple explanations by Isaac Newton, and we should not change the gravitational formula for just this one case. In effect, he enunciated the principle of avoiding *ad hoc* explanations, which may be called *Buffon's rule for methodology*. Given an option of Buffon's rule and another of the rule named "Inference to the Best Explanation," which rule would you choose? Whichever you do, you discern the skeptical problem of the criterion lurking in the background. Fortunately, Alexis Clairault solved the issue of the criterion by avoiding it.

Isaac Newton showed that the moon's acceleration toward the earth, calculated from astronomical measurement, was almost exactly equal to the acceleration of a body falling near the earth, as measured by a second's pendulum. Gravitational force is proportionate to acceleration during fall. If we revise the gravitational force on the moon, as Alexis Clairaut had proposed, it would be incompatible with the known accelerations of bodies falling near the earth. We would have a new discrepancy. So, the revision he had suggested was not the solution he sought. But it failed because the puzzle remained unsolved – a paradox remained – and not because he adopted Buffon's rule. Alexis Clairaut decided that he had to go back to the drawing board to find out why Isaac Newton's force did not produce the desired result and found, to everyone's surprise, it did. But that was luck, you may say.

An apparently unique solution may not be really unique, after all. A series of *ad hoc* explanations of phenomena combined into an unrefuted *ad hoc* hypothesis may challenge a presumed uniquely coherent model. It is possible, but this does not save Buffon's rule. All we need is this: we continue experimenting until we find an *experimentum crucis* (Isaac Newton) or an *Instance of the Finger Post* (Francis Bacon) to rediscover uniqueness. The argument is simple. In uniqueness, we trust – for adopting a rule is skeptically challenged.

We become foundationalists if we demand infallible proof of uniqueness. We can assure ourselves that if unique, our model solution must be true, in which case we have some knowledge. But we cannot go beyond that to a certainty of that knowledge. We cannot know that we know unless we can prove that the unique solution contains no hidden error and that no other coherent solution is possible. If we can do that, we can have well-founded knowledge, which would be very, very nice to have until we wake up. Indeed, the evidence from the growth of science suggests that as more discrepancies are found, we may end up with a bigger puzzle – a bigger mess – which calls for a new and different solution. And when Albert Einstein eventually found general relativity, then we found, in turn, that Isaac Newton's brilliant solution to the puzzle that Copernicus generated was not unique. Is that not what happened? But we now have a new solution that is also unique, apparently, in a much larger experimental context.

A difference remains between the method of hypothesis, championed by Plato and Popper, and the method of an affirmative Socratic *elenchus*. When we abandon a hypothesis, we must begin our search for a better hypothesis anew. There is no residue of the old hypothesis. When we abandon a unique model solving an intractable puzzle, we can leave the model but not the puzzle. It remains to haunt us. To solve a larger puzzle later, we must also solve the little old knot in its past. The continuity of problems was a motivating factor for my thinking along these lines, but it seems that I got it, too, as a hint from Karl Popper. He was keenly aware of this unifying aspect of science. He analyzed it differently, using Tarskian formal semantics when he wrote about how scientific growth could yield more verisimilitude. Logic now seems unsuitable for his task. I hope that the development of problems captures what he sought in the unifying growth of science. But all this concerns only fallibilism in the specialized area of scientific research. What about our knowledge at large?

A serious difficulty concerns fallibilism itself¹. Any scientific theory is fallible. But for similar reasons, so is any non-scientific theory or understanding. Then a question arises in the general case: what is the difference between fallible knowledge and a fallible opinion? There is a difference, it seems. To deny it is to make knowledge necessarily infallible, which is an unreasonable conclusion to reach. But I have nothing satisfactorily worked out on characterizing that epistemological difference in a general way.

References

- Bacon, F. (2000, 1620). *The New Organon*, Anderson, Fulton S. ed., and trans. by Spedding, J. Ellis, R. & Heath, D. *The Works*, Vol. VIII, reprinted by Bobbs Merrill
- Empiricus, S. (2000). *Outlines of Skepticism*. Anna, J. & Barnes, J. (eds.) Cambridge University Press.
- Feyerabend, P. (1975). *Against Method: Outline of an Anarchistic Theory of Knowledge*. Verso.
- Giunti, M. (1988). Hattiangadi's Theory of Scientific Problems and the Structure of Standard Epistemologies, *The British Journal for the Philosophy of Science*, Vol. 39, 421-439.
- Hattiangadi, J. (1983). A Methodology without Methodological Rules, in R. S. Cohen & M. W. Wartowsky, eds., *Language, Logic, and Method*, pp. 103-151 in the *Boston Studies in Philosophy of Science* series, D. Reidel Publishing Company.
- Hattiangadi, J. (2021). Popper and Kuhn: A Different Retrospect, *Philosophy of the Social Sciences*, 51(1), 91-117.
- Hume, D. (1977/1748). *An Enquiry into Human Understanding*. Steinberg Eric. (Ed.) Hackett Publishing.
- Kuhn, T. S. (1962). *The Structure of Scientific Revolutions*, The University of Chicago Press.
- Locke, J. (1975/1686). *An Essay Concerning Human Understanding*. N. Paul. (Ed.) Clarendon Press.
- Newton, I. (1672). A Letter of Mr. Isaac Newton, Mathematics Professor in the University of Cambridge; containing his New Theory about Light and Color. *Philosophical Transactions of the Royal Society of London*, Royal Society.
- Newton, I. (1034/1686). *Mathematical Principles of Natural Philosophy*, Vols. I-III. M., Andrew & C., Florian. (Eds.) University of California Press.
- Plato. (1961). *The Complete Dialogues of Plato, Including the Letters*, H. Edith & C. Huntington (Eds.) Random House.

¹ I am grateful to Anandi Hattiangadi for raising this important question that I must address.

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- Quine, W. V. O. (1952). Two Dogmas of Empiricism, in *From a Logical Point of View*. Harvard University Press.
- Vlastos, G. (1994). The Socratic Elenchus: Method is All, in *Socratic Studies*, V. Gregory & B. Myles. (Eds.) Cambridge University Press.

Situational Analysis of Scientific Traditions: Popper's hermeneutical and political turn in philosophy of science*

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Our analysis of Popper's philosophy of science focuses on his concepts of *tradition and situational analysis*. These concepts represent innovative Popperian contributions to a historical and hermeneutical turn in philosophy of science that most of his critics, especially Kuhn, fail to recognize. According to his historical view, Popper conceives sciences as a complex of traditions in continuous transformation and progress by means of rational discussion of theories. In order to grasp the rational progress of scientific traditions, Popper proposes an original method that he calls "situational analysis". This hermeneutical method seeks to understand the concepts, hypotheses, actions, practices, controversies and products that scientists made to solve problems in their specific historical contexts to improve the truth content of theories. In addition to his historical and hermeneutical turn, Popper also inquired about the social and political conditions for the progress of scientific traditions by means of intersubjective criticism of theories and conjectures. According to him, the rational discussion of ideas requires, as necessary conditions, plurality of ideas, intellectual humility, and freedom of thought and communication that can only exist in an open and democratic society. With these considerations, we may say that in addition to a historical and hermeneutical turn, Popper also contributed to a social and political turn in the philosophy of science.

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1. Introduction

Karl R. Popper is one of the founding fathers of contemporary philosophy of science and his ideas have significant relevance in nowadays. His vigorous criticism of the central theses of logical positivism opened up new perspectives for the analysis of the rationality of sciences. Some of these new views suggested by Popper since the 1940's would subsequently be taken up and developed by authors that fostered the historical turn in philosophy of sciences such as Thomas S. Kuhn, Imre Lakatos, and Larry Laudan.

One of Popper's most influential ideas in philosophy of science was to change the focus of scientific rationality from firm and absolute grounds towards the way theories change and evolve progressively through rational criticism. If the rationality of science lays in its peculiar progressive historical process, then scientific methodology should be a mean for promoting theoretical change for the search of truth rather than proving truth of given scientific theories. It is therefore necessary that methods in sciences be not conceived as methods of verification of hypothesis, but as methods of empirical refutation to foster new and better theories. Thus, progressive theoretical change can only be critically appreciated through rational reconstruction of scientific change.

In order to grasp the rationality of scientific theories through their process of change and improvement, it is necessary to conceive theories as historical traditions. Accordingly, Popper put forward a rational theory of traditions and a specific hermeneutical method for historical and philosophical interpretation of scientific traditions, that he calls "situational analysis". This method is as important as logical and methodological analysis of scientific theories, but it has not received due attention.

In this paper, I analyze Popper's concept of tradition and his hermeneutical method for understanding of scientific traditions and discuss the social and political conditions for the rational development of traditions. Highlighting these issues will perhaps gives us a better view of Popper's contributions to contemporary philosophy of science. However, I have to recognize that in the analysis of Popper hermeneutical ideas and his theory of rational traditions I do not apply the hermeneutical method of situational analysis proposed by Popper to understand the development of his philosophical thought. Perhaps applying Popper's method of situational analysis to his own philosophy of science would be a complementary and revealing interpretation of his work for future investigations. But I consider that the hermeneutical, historical and political turn in philosophy of science that Popper started in 1940's, especially in the context of the Second World War and the Cold War, is a necessary consequence of his core epistemological concepts like falsifiability and verisimilitude, since these concepts implies rational discussion of ideas, and comparative analysis of theories through scientific change. Popper himself points out this connection between the epistemological thesis that he presented in the *Logic of scientific discovery* and his central ideas of philosophy of history and political philosophy that he discussed later in *Open Society* and *The Poverty of historicism* (Popper, 1977, 115).

In the following section, I shall focus on the relation between the epistemic criterion of falsifiability and the rational reconstruction of the history of sciences. Then, I will discuss Popper's theory of rational traditions. In the third section, I will focus on the social and political conditions required for the progress of scientific traditions and subsequently I shall analyze his hermeneutical method for understanding them. Finally, I will highlight the virtues of his hermeneutical approach to philosophy of science for an epistemological, social, historical and political understanding of scientific knowledge.

2. Falsifiability, falsification and empirical under-determination in scientific progress

A central thesis of Popper's philosophy of science is that there is no firm, definitive empirical basis neither a strict and conclusive method for verifying or refuting theories. Rather, it is by convention that empirical grounds and methodology of sciences are accepted in a provisional and fallible way. "The bold structure of its theories rises, as it were, above swamp. It is like a building erected on piles...we simply stop when we are satisfied that the piles are firm enough to carry the structure at least for the time being" (Popper, 1968, 111).

Popper acknowledges that Otto Neurath rightly rejected the dogmatic idea that science has solid empirical grounds: "There is no way to establish fully secured, neat protocol statements as starting points of the sciences. There is no tabula rasa. We are like sailors who have to rebuild their ship on the open sea" (Neurath, 1983, 92). However, Popper is critical on Neurath's radical conventionalist view of empirical basis of science: "Neurath avoids one form of dogmatism, yet he paves the way for any arbitrary system to set itself up as 'empirical science'" (Popper, 1968, 97). To avoid empirical dogmatism and radical conventionalism, Popper elaborated his own view of the 'empirical basis' along with his criticism to induction to propose his central epistemological thesis that the rationality of science relies not on its empirical foundations, but rather on the way scientific theories change and evolve by the method of continuous empirical refutations:

These considerations suggests that not verifiability, but falsifiability of a system is to be taken as a criterion of demarcation. In other words: I shall not require of a scientific system it shall be capable of being singles out, once and for all, in a positive sense; but ... in a negative sense: *it must be possible for an empirical scientific system to be refuted by experience* (Popper, 1968, 40-41).

Popper is aware of the problem formulated by Duhem in 1906, known as under- determination problem, which is one of the most important questions in the philosophy of science of the Twentieth century. The central issue of this problem is that it is not only impossible to verify theories inductively, but also it is not possible to conclusively falsify or refute any theory or hypothesis at all. This thesis implies that there is no method for conclusive verification or refutation of scientific theories.

Duhem's argument is twofold. The first argument refers to theoretical dependence of observations, that means that every observation, every experiment presupposes a previous

acceptance of some interpretative theory. Thus, within the process of empirical testing, in case that empirical sentences show to be contradictory with the hypothesis, it is always possible to argue that what is wrong is not that hypothesis, but the theory out of which the empirical propositions are derived. Such an alternative is logically valid and in principle it is as reasonable to save the central hypothesis, as it is to save the interpretative theory and refute the hypothesis in question.

The second argument against strict refutations of theories is relative to the holistic nature of empirical testing of hypothesis. This means that we can never empirically test a single isolated hypothesis, but we always have to test a set of hypotheses interconnected against the observational sentences, which in turn, depend on other theoretical assumptions. Therefore, "...when the experiment is in disagreement with his predictions, what he learns is that at least one of the hypotheses constituting this group is unacceptable and ought to be modified; but the experiment does not designate which one should be changed" (Duhem, 1962, 187).

To solve these problems, Duhem sustains that scientific rationality goes beyond the scope of logic and methodology, and it necessarily enters in the realm of the sensible discussion and deliberation that he calls good sense (*bon sens*). This is a kind of prudential rationality that demands some basic moral and epistemic virtues, mainly intellectual humility:

Since logic does not determine with strict precision the time when an inadequate hypothesis should give way to a more fruitful assumption, and since recognizing this moment belongs to good sense ...nothing will delay the decision which should determine a fortunate reform in a physical theory more than the vanity which makes a physicist too indulgent towards his own system and too severe towards the system of another (Duhem, 1962, 218).

Popper accepts the theoretical dependence of observational statements and the holistic structure of empirical testing of hypothesis and therefore admits that it is impossible to refute strictly any theoretical hypothesis, because it is always possible to argue that experiments or observations are not reliable: "...no conclusive disproof of a theory can ever be produced... If you insist in strict proof (or strict disproof) in the empirical sciences, you will never benefit from experience" (Popper, 1968, 50). However, Popper offers a different but convergent solution to the problem posed by Duhem in order to establish falsifiability as a clear criterion of demarcation of scientific knowledge, which must be distinguished from actual falsification of hypothesis:

Hence, to repeat, we must distinguish two meanings of the expressions 'falsifiable' and 'falsifiability':

- (1) 'Falsifiable' as a logical-technical term, in the sense of the demarcation criteria of falsifiability. This purely logical concept- falsifiable in principle, one might say- rest on a logical relation between the theory in question and the class of basic statements (or the potential falsifiers described by them).
- (2) 'Falsifiable in the sense that the theory in question can definitively or conclusively or demonstrably be falsified ('demonstrably falsifiable'). I have

always stressed that even a theory that is obviously falsifiable in the first sense, is never falsifiable in this second sense. (For this reason, I have use as a rule the expression 'falsifiable' in the first technical sense. In the second sense I have as a rule spoken not of falsifiability, but rather of 'falsification and of its problems') (Popper, 2012, xxii).

Since strict refutations or falsifications are impossible, what the demarcation criterion of falsifiability points out is an effective methodological procedure to criticize theories and supplant them by better ones, with less errors, less false content and more truth content, that is, with more relative truth or verisimilitude.

The concept of verisimilitude is one of the most important Popper's contributions to philosophy of science. It highlights the heuristic value of scientific theories even more than their empirical corroboration. What most improve the verisimilitude of new theories are the new facts that discover and predict, rather than the known facts that confirm them. "... Truth is not the only aim of science. We want more than mere truth: What we look for is interesting truth...truth that has a high degree of explanatory power, which implies that it is logically improbable" (Popper, 1963, 229). For these reason scientists should seek to refute and not to confirm established theories by means of the deductive method of empirical testing of hypothesis (*modus tollens*).

To solve the logical and empirical under-determination problem Popper formulates a fundamental methodological rule: "First a supreme rule is lay dawn... It is a rule which says that the other rules of scientific procedure must be designed in such a way that they do not protect any statement in science against falsification" (Popper, 1968, 54). This supreme rule means that we should never save the central hypothesis under testing from refutation, in order to promote scientific progress in terms of increasing the verisimilitude of new theories with greater explanatory power, which, according to Popper, is the main aim of science (Popper, 2012, 132).

If scientists seek to refute theories and hypotheses then it is possible to detect errors and overcome them through the formulation of bolder and better theories. This non-conclusive process of conjectures and refutations is not a logical algorithm to carry out by isolated scientist, rather is an intersubjective process that takes place in discussions and controversies within a community of scientists.

3. Rational criticism and open society

Popper remarks that "Intersubjective testing is merely a very important aspect of a more general idea of inter-subjective criticism, or in other words, the idea of mutual rational control by critical discussion" (Popper, 1968, 44). Edward Shills considers that intersubjective criticism is a civic virtue that sharply distinguish rational intellectual and political traditions from any kind of authoritarian traditionalism, which "...is not only hostile to liberty, it is also radically hostile to tradition... In societies where liberty has already been established, traditionalism is the greatest

enemy of civility...” (Shills, 1997, 116). Popper also considers that mutual control by rational discussion is an essential virtue for the rational development of intellectual and political traditions. Popper sustains that a free and democratic society, that is an open society, is interdependent with the broad tradition of intersubjective criticism where scientific tradition may grow. In this sense, Popper asserts “Science and more specific scientific progress are the results not of isolated efforts but of the free competition of hypothesis... Ultimately, progress depends very largely on political factors, on political institutions that safeguard the freedom of thought: on democracy” (Popper, 1960, 155). This thesis is very important because it establish certain social and political conditions for the progress of scientific traditions and, therefore, it represents some kind of social and political philosophy of science, which is one of the most promising perspectives in the field (Popper, 1957, Popper, 1994, Kitcher, 2001, Turner, 2003, Velasco, 2004, Reisch, 2005, Lopez & Velasco, 2013).

According to Popper, in addition of plurality and freedom of thought and communication, it is also necessary intellectual humility for the development of science in an open society. This attitude is a guiding principle of critical rationalism, which is not only a way of thinking, but also a way of living. He formulates this principle as an aphorism: “I may be wrong and you may be wright, and with an effort, we may get nearer to truth” (Popper, 1994, xii). This epistemic and moral attitude is very similar to Duhem’s *bon sens* that we discussed.

Unlike Positivists and Kuhn, Popper does not think that a common framework such as physicalist language or a paradigm is necessary to carry out critical communication between different persons or communities. As a radical hermeneutical philosopher, he believes in the capability of human beings for understanding expressions from different languages and cultures. Thus, incommensurability is not a threat to rationality, as Kuhn believed, but quite the contrary: “If the readiness [to learn] is there, the discussion will be the more fruitful the more the partners’ background differ. Thus, the value of a discussion depends largely upon the variety of the competing views” (Popper, 1963, 352).

Popper extends the virtues and benefits of plural discussions and controversies to the political realm: “The tradition of rational discussion creates, in the political field the tradition of government by discussion, and with it the habit of listening another point of view; the growth of a sense of justice; and readiness to compromise” (Popper, 1963, 352). Government by plural and rational discussion is the main feature of a democracy in open societies and prevents monolithic traditionalism and authoritarianism, especially authoritarianism based in the monopoly of supposed universal truth in a person, group or social class, such as the philosopher- king that Plato describes in *The Republic*. Popper criticizes this kind of authoritarianism, that we may call “epistemocracy”, in his *Open Society and its enemies*, along with any kind of social determinism, specially what he calls “historicism”.

Popper explicates his concept of historicism in terms of an epistemic and a political thesis. The first one is this:” I mean by historicism an approach to the social sciences which assumes that historical prediction is the principal aim...” (Popper, 1960, 3). The second thesis refers to scientism in politics: “It is scientific reasoning, historicist social science, which alone can tell us the direction

reasonable activity must take if it is to coincide with the direction of impending changes" (Popper, 1960, 50). This thesis involves a justification of authoritarianism and even totalitarianism in terms of an alleged unquestionable scientific knowledge. This is the main reason of Popper's critique of historicism and the main motive of his defense of the open society based on the tradition of rational criticism of traditions, included of course scientific traditions.

4. Popper's theory of rational traditions

The concept of tradition is so important that Popper himself put forward a specific methodological proposal for understanding scientific traditions. This methodological proposal actually constitutes one of Popper's most valuable contributions to history and philosophy of sciences, and one that also distinguishes him sharply from reductionist analytic philosophers. Popper believed that his methodological proposal for social sciences, which he called "situational analysis," actually constituted a hermeneutic proposal. By vindicating a hermeneutic method, Popper moved radically away from the Positivists, who were extremely scornful of hermeneutic methods in the social sciences.

Karl R. Popper put forward an original view of history and philosophy of science that was very influential in the second half of the Twentieth century. The main idea of Popper is that the development of scientific knowledge is conditioned by historically inherited theories, methods, criteria and values, which orient the posing of problems, the formulation of hypotheses and their rational acceptance or rejection. Popper calls these inherited elements "tradition". Years later, philosophers of science like Kuhn (1959) and Laudan (1977) elaborated this concept as a central part of their respective models of scientific change.

Popper's formulation of his concept of tradition is a response to Oakeshott's article published in 1947, "Rationalism in Politics" (1967). In this paper, in addition to questioning the universalist claims of modern contemporary rationalism, Oakeshott defends the importance of traditions in the sphere of moral and political knowledge against the hegemony of science and technology. In response to Oakeshott, Popper writes the essay "Towards a rational theory of tradition", originally a lecture given at Oxford in 1948. In this article, Popper extends the significance of tradition to science in a turn to ground the rationality of scientific knowledge on historical basis.

Popper opposes the rationalist conceptions of modernity that regard tradition as an obstacle to objective and rational knowledge based on indubitable sources (reason or experience). He agrees with Michael Oakeshott's criticism to modern and contemporary philosophies that conceives rationality and traditions as incompatible. By opposing science and tradition, modern philosophers not only overlook the historical fact that it is impossible for us to "free ourselves entirely from the bonds of tradition. The so-called freeing is really only a change from one tradition to another" (Popper, 1963, 122). In addition to ignoring this issue, rationalist philosophers lost sight that traditions provide us with knowledge that has been created over centuries and millenniums: "If we start afresh, then, when we died, we shall be about as far as Adam and Eve were when they died..."

We must stand on the shoulders of our predecessors. We must carry on a certain tradition” (Popper, 1963, 129).

Another important function of traditions is the development of a critical attitude that enables scientists and philosophers to question and reflect on the givens of traditions in order to be able to free themselves from their prejudices and taboos. This liberation may be achieved through the reflexive acceptance of tradition or through their rejection and replacement with new contents or a combination of acceptance and innovation. In any case, critical understanding of traditions is essential for true rationalism: “... there are only two main attitudes possible towards tradition. One is to accept a tradition uncritically... The other possibility is a critical attitude, which may result either in acceptance or in rejection, or perhaps in a compromise” (Popper, 1963, 122).

Outstanding authors in hermeneutics such like Gadamer and Ricoeur subsequently developed the dialectic between conservative acceptance and innovative change of traditions. Gadamer, for example, thinks that tradition does not exclude change and transformation. “What is transmitted by tradition can be criticized, corrected and supplanted... [Conversely] in ages of revolution, far more of the old is preserved in the supposed transformation of everything than anyone knows, and it combines with the new to create a new value” (Gadamer, 2004, 282-283). Thus, conservation and change confront and complement each other in the continuous movement of traditions. Kuhn also highlights this “essential tension” between tradition and innovation in the historical process of sciences (Kuhn, 1959).

Popper recognizes two types of intellectual traditions. There are specific traditions comprising specific theories and myths produced and transmitted by previous generations, which constitute “traditions of the first order.” These traditions are the principal source of our knowledge, and provide the subject matter of rational criticism:

The fact that most of the sources of our knowledge are traditional condemns anti-traditionalism as futile. But this fact must not be held to support a traditionalistic attitude: every bit of our traditional knowledge is open to critical examination and may be overthrown. Nevertheless, without tradition, knowledge would be impossible” (Popper, 1963, 28).

The task of critical analysis of traditional knowledge corresponds to another type of tradition, which is a transhistorical metatradition, lacking specific cognitive contents and consisting of a critical attitude and methodology. This “tradition of the second order” is the critical rationalism invented by Greek philosophers over two thousand years ago and one that has continued to be the most important feature of scientific knowledge, even today: “The Greek philosophers invented a new tradition – the tradition of adopting a new attitude towards the myths, the tradition of discussing them” (Popper, 1963, 126). This critical tradition has overcome traditionalism and dogmas in order to live rationally in and through specific traditions in continuous transformation.

Specific traditions of the first order and the transhistorical tradition of the second order not only fulfill different functions (source and criticism of knowledge) but also have very different

characteristics. Traditions of the first order are plural, always emerge in specific historical contexts and change continuously as result of the critical evaluation undertaken on them from the tradition of the second order. This last type of tradition is unique, invariable and of universal scope. Specific traditions of the first order merely provide material for critical evaluation. Conversely, the critical tradition of the second order undertakes a critical scrutiny of traditions, thereby fostering their change and progress. However, the critical tradition seems that has not changed significantly since Greek Antiquity.

Popper applies the interplay between first and second order traditions to explain the historical origins of sciences: "If however, science advances by the tradition of changing its traditional myths, then... you need two beginnings for science: new myths and new tradition of changing them critically" (Popper, 1963, 130).

In sum, it is possible to explain the rational progress of science as a synthesis of the two types of traditions: A metatradition that continuously questions and change specific scientific traditions towards an endless approximation to truth (verisimilitude).

5. Hermeneutic method of situational analysis

In addition to proposing a philosophical model of scientific change through continuous criticism of traditions, Popper also put forward a hermeneutic methodology for understanding the rationality of scientific traditions. Popper sustains that "a theory of tradition must be a sociological theory, because tradition is obviously a sociological phenomenon" (Popper, 1963, 123). Insofar as scientific traditions are historical and social events, philosophy of science is also a socio-historical discipline. It is perhaps for this reason that Popper was interested in the methodology of social sciences, particularly in hermeneutic methodology.

Popper accepted the idea that understanding is the goal of the social sciences and the humanities. However, Popper believed that understanding is not exclusive to social sciences, or to the humanities, but was also the goal of all science, included natural sciences: "I am prepared to accept the thesis that understanding is the aim of the humanities. But I doubt whether we should deny that it is the aim of natural sciences also" (Popper, 1972, 185). Popper criticizes both the Positivists, who sought to impose a mistaken natural science model on any discipline, and the hermeneutic humanists, who mistakenly took positivism as the only philosophy appropriate conception for natural sciences. Thus, Popper defends a wide and radical hermeneutic conception of natural and social sciences alike.

Popper also questions some hermeneutical approaches and methodologies in history, like the subjective empathetic understanding method of *Verstehen* proposed by Dilthey and Collingwood. Instead of the method of *Verstehen*, Popper defends situational analysis as a method of objective understanding. He first refers to this method in *The Open Society and its enemies* (1945, Vol II, Ch. 14), and in *The Poverty of historicism* (1957, sec. 31), but he further explains his method in other works like "Toward a rational theory of tradition", originally published in the *Rationalist*

annual (1949) and reproduced in *Conjectures and Refutations* (1963, Ch. 4), and “On the theory of objective mind” reproduced in *Objective Knowledge* (1972, Ch. 4).

The Open Society and *The Poverty of historicism* were written at the same time in the context of Hitler, Mussolini, and Stalin authoritarian regimes. Both of them are works of political philosophy that intend to defend pluralism and personal freedom against totalitarian states that represent his “war effort” and “were meant as a defense of freedom against totalitarian an authoritarian idea and as a warning against the dangers of historicist superstitions” (Popper, 1977, 115). However, Popper points out that “Both grew out of the theory of knowledge of *Logik der forschung* and out of my conviction that our often-unconscious views on the theory of knowledge and its central problems (...) are decisive for our attitudes toward ourselves and towards politics” (Popper, 1977, 115).

The most important epistemic, moral and political attitude is precisely critical or rational attitude understood as “openness to criticism – readiness to be criticized and eagerness to criticize oneself...the demand to extend critical attitude as far as possible might be called ‘critical rationalism’” (Popper, 1977, 116). The conviction that critical rationalism is a common ground for the progress in the spheres of knowledge, society and politics constitutes the core of what he calls his “metaphysical research program” (Popper, 1977, 148-151).

The method of situational analysis involves reconstructing the “problematic situation” faced by a scientist as a rational agent whose actions or works we want to understand as appropriate solutions to relevant problems in order to achieve better explanations of interesting phenomena. In doing this reconstruction “...we have to distinguish clearly between the metatheories of the history of sciences and the problems and theories of scientist” (Popper, 1972, 177). Consequently, situational analysis is a reconstruction of plausible actions and decisions of a scientific agent as a rational response to a specific problematic situation in order to propose new hypothesis and theories with more knowledge content and more explanatory and predictive force. In this sense, situational analysis does not offer descriptions or social explanations of actual behavior of scientists.

The problematic situation consists of the problem to which the theory seeks to respond and the “background” or “cognitive framework” in which the author raises the problem and attempts to resolve it. “This background consists, at least, of the language which always incorporates many theories in the very structure of its usages and of many other theoretical assumptions, unchallenged at least for the time being” (Popper, 1972, 165).

It is important to stress the idea of background knowledge, precisely because it defines a set situation that enables a person to raise certain problems, conjectures, solutions and critically assess them. This notion of background may be replaced by the concept of tradition of the first order. Background knowledge or specific traditions constitute an essential theoretical framework for understanding the scientific theories of the past and for evaluating the author’s rationality for proposing and attacking or defending those theories. Imposing theories or concepts from outside the author’s context to evaluate the rationality of his theories and arguments constitutes a “failure of historical understanding” (Popper, 1972, 169).

In sum, the method of situational analysis aims to find out the reasons that a scientist could possibly have to rationally propose, accept or reject certain hypotheses within his particular cognitive situation or background. In this sense, Popper acknowledges the practical and contextual dimension of scientific knowledge and overcomes the merely theoretical and abstract conception of science. On this point Popper agrees with Neurath's criticism of Descartes' strict theoretical conception of science (Neurath, 1983) and anticipates the historical, social and pragmatic turn in philosophy of science.

Thus, for example, in the case of Galileo's theory of tides, which Popper recognizes as false from the outset, he shows the rationality underlying Galileo's decision to maintain the hypothesis of the Earth's circular movement. In contrast to Galileo's critics who accused him of being dogmatic, Popper pointed out that "Galileo's method was correct when he tried to proceed as far as possible with the help of the rational conservation law of rotary motions" (Popper, 1972, 174). Popper explained that the failure of Galileo's theory of tides was not due to a failure of rationality in his argument, but rather to a flaw in the framework or background of his particular problematic situation. Galileo was aware of the unsatisfactory nature of his theory, but inasmuch as he had no tradition of other theories and laws (such as forces of attraction, for example) in his background, he was unable to develop the solution that Newton subsequently formulated in another problematic situation and background.

This inherited knowledge or background traditions are part of the "third world" or "objective mind", in Popper's terms, insofar as it involves a world of autonomous cultural objects (theories, ideas, traditions, hypotheses, interpretations, etc), rather than subjective events, depending on specific individuals. Popper sustains "the superiority of the third world method -consisting of critically constructing problematic situations- over that of the second world, consisting of intuitively reviving a personal experience" (Popper, 1972, 170).

Popper does not ignore the important function of the author or agent in the maintenance and transformation of traditions, since although they define limits for posing and solving problems, they are also an object of questioning and criticism on the part of the author, which promote changes and innovations within the same traditions that are handed down to them:

Thus, we may say that the most lasting contribution to the growth of scientific knowledge that a theory can make are the new problems which it raises, so that we are led back to the view of science and of the growth of knowledge as always starting from, and always ending with, problems –problems of an ever-increasing depth, and an ever-increasing fertility in suggesting new problems (Popper, 1963, 170).

Popper states that is precisely the change in problematic situations, rather than the success of theories that determines the progress of the sciences. In this respect, the most important function of theories is to raise new problems whose solution requires a change in the background or tradition from which they originally emerged. Hence, we can conclude that for Popper, the heuristic function

of theories for discovering and formulating new problems is more important than the degree of corroboration of these theories, although this plays a central role too.” The history of sciences must not be taken as a history of theories but rather as a history of problematic situations and their modifications (sometimes imperceptible, sometimes revolutionary) through the interventions of attempts to solve the problems” (Popper, 1963, 222).

6. Summary and conclusions

Our analysis of Popper’s philosophy of science focused on the concepts of tradition and *situational analysis*. These concepts represent innovative aspects in Karl R. Popper’s philosophy of science that are not present in the most popular interpretations and they seem to be closer to the programs of history and philosophy of science of some of his critics such as Kuhn, Lakatos, and Laudan who fail to acknowledge Popper’s contributions to historical understanding of scientific rationality.

The most distinctive feature of this new historical conception of scientific rationality consists precisely of conceiving it as a process of continuous transformation of scientific traditions. This process consists of the critical and creative use of the theoretical resources that scientists inherited from their predecessors for raising new problems whose solutions require the transformation of inherited tradition. Thus, innovation, discovery and the heuristic force of hypotheses and theories constitute the determining factor in evaluating the rational progress of scientific traditions.

As we have seen, the historical understanding of the rationality of traditions requires the hermeneutic method of situational analysis. If we take situational analysis seriously, we must recognize that this method seeks to understand the actions, practices and products that scientists made to solve problems in their specific historical contexts. To achieve this objective understanding, we must try to reconstruct the particular background knowledge -constituted by inherited concepts, methodologies and theories from traditions- as well as the controversies that took place in a specific cultural atmosphere and social frame. Consequently, Popper acknowledges that philosophy of science, considered as historical and rational reconstruction of scientific traditions in specific contexts, is a social discipline but not necessarily a social science. Rather it is motivated by metaphysical ideas about society, history and scientific rationality.

If rationality of theories must be evaluated in terms of its contribution to the progressive change of scientific traditions by rational intersubjective criticism in specific contexts, then we should not impose ahistorically a universal method and standard, but we have to take into account those methodologies available in the specific circumstances of the tradition in question. Otherwise, we would make a “failure of historical understanding” (Popper, 1972, 174) which is also a philosophical misunderstanding of the rationality of scientific traditions.

Rational decisions in confirming or refuting scientific theories require not only sharp methods of empirical testing, but also intersubjective controversies, deliberations and prudential judgments, which are a kind of dialogical rationality similar to Duhem’s idea of *bon sens*. According to Popper this kind of practical rationality demands some objective and subjective conditions. The main objective requirements are plurality of opinions, hypothesis, theories, traditions, etc. and freedom

of intersubjective criticism which is the essence of critical rationalism. These objective and internal conditions require in turn some external conditions such as an adequate social and political frame that safeguards liberty of thought and communication, which may only flourish in an open and democratic society. The most important subjective requirements are intellectual humility, fallibilism and readiness to learn from other persons and different opinions, traditions and cultures. The more different they are from our own traditions, the more we can learn from them.

Subjective moral and intellectual virtues, are reciprocally reinforcing with objective intellectual, social and political conditions of an open and democratic society. The democratic institutions safeguard pluralism and freedom of thought and communication and, at the same time, fallibilism and intersubjective criticism foster government by discussion and plural deliberation, which are the core of a republican democracy. The interplay of scientific and democratic traditions suggested by Popper represents an important contribution to a broad and innovating political philosophy of science, which nowadays is one of the most promising perspectives in the field.

References

- Duhem, P. (1962). *The Aim and Structure of Physical Theory*. Atheneum.
- Gadamer, H. G. (2004). *Truth and Method*. Continuum.
- Kuhn, T. (1977). *The essential tension and other essays*. University of Chicago Press.
- Kitcher, P. (2001). *Science, Truth and Democracy*. Oxford University Press.
- Laudan, L. (1977). *Progress and its Problems*. University of California Press.
- López Beltrán, C. & Velasco Gómez, A. (ed) (2013). *Aproximaciones a la filosofía política de las ciencias*. Universidad Nacional Autónoma de México.
- Neurath, O. (1983). *Philosophical Papers 1913-1946*. D. Reidel Publishing Co.
- Oakeshott, M. (1967). *Rationalism in Politics and Other Essays*. Methuen.
- Popper K. (1945). *The Open Society and Its Enemies*, Vol. II. Routledge and sons.
- Popper, K. (1957). *The Poverty of Historicism*. Routledge and Keagan Paul.
- Popper, K. (1963). *Conjectures and Refutations. The growth of scientific Knowledge*. Routledge and Keagan Paul.
- Popper, K. (1968). *The Logic of Scientific Discovery*. Harper and Row Publishers.
- Popper, K. (1972). *Objective Knowledge*. Oxford University Press.
- Popper, K. (1977). *Unended Quest. An intellectual autobiography*. Collins.
- Popper, K. (1994). *The Myth of the Framework. A defense of rationality and science*. Routledge.
- Popper, K. (2007). *Realism and the Aim of Science*. Hutchinson.
- Reisch, G. (2005). *How the Cold War Transformed Philosophy of Science. To the icy slopes of logic*. Cambridge University.
- Shills, E. (1997). *The Virtue of Civility*. Liberty Fund.
- Suárez Íñiguez, E. (Ed.) (2007). *The Power of Argumentation*, Rodopi.
- Turner, S. (2003). *Liberal Democracy 3.0*. Sage Publications.
- Velasco Gómez, A. (2004). Toward a Political Philosophy of Science. *Philosophy Today*. 48(5), 116-121.



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Pragmatic Rationalism: Popper, Bartley and varieties of rationalism

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ABSTRACT

Rational discussion guides, but does not compel individual decisions, and the best process of inquiry and decision should vary with a person's goals and situation. Sir Karl Popper noted that after a result of observation or experiment has been obtained by independent researchers, scientists agree to reject as false theories that are contradicted by accepted facts. Popper, though, wrongly assumed this consensus also applies to acceptance for purposes of research. In reality researchers develop competing theories about which evidence is currently in conflict, and sometimes even refuting the theories in their current form. Further, Popper asserted that only negative arguments should be used in rational inquiry. In reality, productive inquiry involves also positive arguments, even in science. Positive considerations such as which basic theories are justified by the researcher's preferred metaphysics, or what theories in applied science are justified by existing accepted basic theories, are also used productively.

Keywords:

Popper, refutation, rationality,
inquiry, Bartley, science,
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During the Enlightenment or Age of Reason, from the late 17th to early 19th century, rational inquiry and discussion contributed to the creation of both modern science and representative democracy. However, how reason should function, and how it should best be used in the future has never been clear.

During the Age of Reason itself, the nature of rationality was never a settled question, with a single clear answer. The role of evidence in rational assessment was then a key dividing issue between different schools of rationalists. In the last century, Sir Karl Popper, my late teacher, took up this long-standing debate, and made important advances in understanding the best role of rationality in science and society. However, much confusion has remained, as reflected in disputes among Popper and his followers, particularly those involving the views of Popper's former student W. W. Bartley.

Much of the confusion has, I believe, come from a failure to distinguish between different types of rationality. The first type of rationality is *rational inquiry*, in which people weigh the logical implications of rival solutions to problems, often in a social process involving discussions and sometimes decisions with multiple individuals involved, publications, and so on. Examples of rational inquiry include scientific research, in which theories to explain observations are proposed and assessed, and democratic political processes, in which alternative public policies are proposed and debated, candidates nominated and their merits disputed. Of course, both in science and politics inquiry can be more flawed or more effective in sorting out the best theory, social policy, or candidate.

As well as rational inquiry, beliefs and decisions can be rational. *Rational belief* has at least two meanings: a basic and a stronger meaning. The basic meaning of the claim that a belief is rational is that the belief reflects the realities of the situation that a sane person would know. The stronger meaning of 'rational belief' is that the belief is strongly influenced by a prior, extensive rational inquiry, preferably conducted in consultation with others. *Rational decision* also has basic and stronger meanings. The basic meaning is that the individual's decision serves his or her interests and goals, in accord with the person's basic beliefs. The strong sense of 'rational decision' is that the personal decision is influenced by an extensive rational inquiry, in consultation with others.

With these distinctions in mind, we can see that rational *inquiry* is only desirable when there is a need and time available. And nature of the inquiry and the participants should vary with the issue and context. Science is an example of when there is both time and need, and extended rational inquiry is desirable. Science is an unending, multi-generational search for truest and fullest explanation of the world of our experience, and the long time horizon means benefits of inquiry outweigh other considerations. A contrasting case is when a person has to decide what flavor of ice cream cone to order at a shop, and many are in the queue behind him or her, waiting to order. Here, an immediate, intuitive decision is preferable to spending time on critical analysis of the relative merits of the flavors. Here, the benefits of time spent on rational *inquiry* do not outweigh the costs.

The decision on flavor of ice cream is usually rational in a weak sense, reflecting the person's preferences, but not in the strong sense of being preceded by a rational inquiry. In between these two extremes of scientific research and choice of a flavor of ice cream, there is a huge variety of appropriate kinds of rationality—including major life decisions, political debate, and voting decisions. What kind of rational inquiry—whom to consult, what issues to discuss, how to discuss, and how long it should last—will vary with the purpose of the inquiry or the decision, and the situation. In that sense, whether rationality is needed, and what kind and how much is appropriate is a *pragmatic* decision: the best process depends on the goals of the individuals or groups involved, and situation.

This sense of 'pragmatic', I should make clear, is different from the American philosophical movement which held that 'truth' and 'usefulness' are identical, and has been called 'Pragmatism'. Truth and usefulness are not identical, because a theory being useful in one case, or even many cases, does not mean that the theory is fully true. Popper was right to follow the normal sense of truth as 'correspondence to reality,' with the guidance of logician Alfred Tarski, who showed the traditional meaning is definable and defensible in formal logic. This meaning of truth is relatively straightforward, even though ascertaining what claims are true is often quite difficult. Rational inquiry helps, even though it is never fully conclusive.

When we accept a pragmatic view of rationality—that there are different kinds of rationality, and when to use them should vary with the goals and situation—some of Popper's analysis holds up, but some needs to be seriously modified.

Popper on Rationality in Science, and Beyond

Karl Popper's analysis of rationality in science and beyond had important new insights, but also significant weaknesses. His theory of refutation is strong and holds up, but his theory of the 'acceptance' of theories is weak, and needs change.

The foundation of Popper's view of refutation is his analysis of "the empirical basis" of science, meaning reports of observation and experiment, or 'basic statements.' Popper noted that when a scientist reports on an experiment, his or her description of the experimental set up has some generality, as it applies to the future. Popper holds that repetition by independent researchers is needed before a report of an experimental result is generally accepted by scientists. As Joseph Agassi (1975) has pointed out, this rule of general acceptance by scientists of observation reports after repetition by independent, qualified observers—and rejection of conflicting hypotheses—was in fact advanced by Robert Boyle early in the history of modern science.

Popper argues that while logic does not compel scientific researchers to agree with a repeated result, scientists have adopted a "convention" to treat a 'basic statement', as established. A basic statement is a statement of the result of an observation or experiment that has been corroborated by an independent researcher, or many researchers. The agreement of researchers to accept basic statements as true is for pragmatic reasons: "We need them [basic statements] in order to decide whether a theory is falsifiable, i.e., empirical. ... We also need them for corroboration of falsifying

hypotheses, and thus for falsification of theories” (Popper, 1968, 100). In sum, we need Boyle’s rule to have a common scientific assessment of how well scientific theories explain the results of observation and experiment. (The agreement on basic statements is *not* ‘conventionalism’ in the sense of viewing scientific theories as just convenient summaries of data, without truth claims.)

Popper also pointed out an important asymmetry of refutation and confirmation. Once a basic statement is accepted as true, it logically implies that any universal theory which contradicts it is false, i. e. refuted. That is, once a basic statement is accepted as true, any rational scientist—one who accepts logical implications—is bound to regard theories that are inconsistent with it as false, refuted. To use a common example, ‘all swans are white’ is refuted by an independently repeated observation of one black swan. In contrast, a confirmation of seeing one additional white swan tells us little more about the truth of ‘all swans are white’.

Because of the great logical force of refutation, Popper urged researchers to express their theories in a testable form. And he labelled as ‘scientific’ only theories that are testable. Theories that are confirmable, but not testable, such as the claim, ‘There exist fields of force in empty space—space free of matter,’ Popper labelled as ‘metaphysical’. Popper did acknowledge, though, that such metaphysical theories can and do guide scientists in their programs of research. The problem is that this makes metaphysics a part of scientific research, rendering ‘testability’ no longer a clear marker of science. W. W. Bartley recognized this, and it was the source of his first quarrel with Popper.

In spite of the original German title, *Logik der Forschung* (*Logic of Research*), Popper (1968) in *The Logic of Scientific of Discovery* followed the Vienna Circle of positivists in focusing on the status of theories, rather than on extended research, and he assumed consensus within science on acceptance of the currently best scientific theory. Such consensus is, however, neither historically accurate nor desirable. Popper clearly stated that not only do tests of theories by observation and experiment eliminate some theories by refutation, but also that “*we choose the theory* which best holds its own in competition with other theories, the one which, by natural selection, proves itself fittest to survive.” (My emphasis, Popper, 1968 p. 108) Such a consensus choice by scientists, Popper claims, is the theory that not only survives testing, but one whose predictions are also confirmed—or ‘corroborated,’ in Popper’s terminology. However, consensus acceptance of corroborated theories for the sake of further research is contradicted by the history of field theory. I chronicled the history of rival views in my first book, *Fields of Force* (1974, 2014) there were both important research programs assuming particles and empty space, and rivals, assuming fields of force filling space. Scientists working in both rival programs made important contributions to the advance of electromagnetic theory.

In sum, history vindicates Popper’s insight on the power of refutation of theories by reports following Boyle’s rule: reports of observations and experiments, corroborated by independent researchers, can refute theories, and the refutations are not later reversed. However, history contradicts Popper’s claim that there is always a consensus of researchers accepting the theory which has survived refutation—implying they base further research on the assumption of its truth.

In reality, different scientific researchers sometimes take different, rival pathways, and historically such rivalry has been productive.

Rationality and Political Policy

When we go outside science, to rationality generally, we see that the role of reason varies greatly, not only in extent—as in the example of flavor of ice cream cone, which involves no rational inquiry—but also in that the role of rational discussion is different depending on the goal, the people involved, and the situation. For example, in politics, rational debate over the merit of policies is just one tool of persuasion, and how much logical arguments help varies with the candidate and the electorate. Candidates also use slogans, emotional appeals, endorsements, and, alas, even lies, to win over voters.

Popper (1966) analyzed the role of rationality in politics in *The Open Society and Its Enemies*, and in shorter works. His analysis has important insights, but is frustratingly fragmentary, and at times confused and contradictory.

Popper's key important insight is that there is *feedback* on policy from voters, in which voters reflect their personal experience of the impact of policies in their political choices—their choices of parties and candidates. This feedback mechanism parallels the way that scientists use evidence to test theories in science, as Popper (1968) had described in *Logic of Scientific Discovery*. In science, scientists use observation and experiment to ascertain evidence that bears on what actually happens in particular cases—what happens under what conditions. Similarly, in politics, voters experience the impact of policies on their lives, and observe the impact of these policies on people they know or communicate with. As a result, voters may see which policies work and don't work, under what conditions. And, just as evidence can refute a theory, personal experience of a social policy can refute or confirm claims of its promised effects. For example, reducing government investment in families, education and health care can result in fewer job opportunities, and higher unemployment, not more jobs and lower unemployment. When the failure of promised benefits is lived experience, it can be not only convincing, but also motivating to voters—motivating them to choose better policies and better candidates.

However, there is a big problem with this picture. The evaluation of claims for social policies is more confused and inconclusive than evaluation of theories in natural science. And as a result, people's views of social policy are more confused and disparate than is the case with scientists viewing theories in natural science. Popper attempted to solve this problem with a theory of testing in the social sciences. However, his theory is weak, and at times contradictory, so that it ends up being of no help. It is possible to have a stronger theory of testing in social science, and this stronger theory, if adopted by social scientists, might lead to the kind of rational feedback that Popper aspired to. Let us first look at Popper's account and its problems, then an improved view of testing in the social sciences.

As Popper has noted, in natural science there has been a high level of agreement over what should count as natural laws—even with some lingering disputes, such as over the role of

probability. And the purported natural laws have been testable by basic statements on which there is consensus. In social science, in contrast, how to formulate social theories has not been clear, and how to test the theories is also often unclear—as I explained in ‘Testability in the Social Sciences.’ (Berkson, 1989.) As a result, even among experts there are great differences of opinion on the status of social policies. And among the voters there is equal or greater disagreement over what events mean on the benefits of policies. Thus, in politics, evidence and rational debate has only a weak influence in resolving conflicts between policies, candidates, and parties. As a result, the influence of rationality in politics is much more tenuous and variable than in natural science.

Popper observed that some pioneering theories in social science, such as Marx’s, have been testable—and actually refuted. Once refuted, though, adherents have generally not produced new and improved, testable versions, but simply made *ad hoc* modifications, such as lists of exceptions—and often accused the other side of bad faith. In Marx’s case, for example, his prediction that workers would seize the means of production first in the most developed countries turned out to be false; the less developed Russia was the first to become Communist. And Marxists have dismissed critics, claiming “false consciousness,” rather than addressing the arguments.

Popper does mention a few testable, universal social laws, such as Plato’s “law of political revolutions, according to which all revolutions presuppose a disunited ruling class.” (Popper, 1966, Vol 1, 38.) However, he generally (and contradictorily) views such laws as not possible, especially rejecting both laws about social wholes (‘holism’), and reduction of social wholes to the psychology of individual actors (‘psychologism’). Instead, inspired by classical economics and Max Weber, Popper prescribes what he calls “situational logic” or “methodological individualism,” to produce testable social theories.

Popper’s situational analysis attempts to avoid psychology, by specifying only the person’s goals, their beliefs about their situation, and their objective situation. As Popper puts it, “The man with certain wishes therefore becomes a man whose situation may be characterized by the fact that he pursues certain objective *aims*; and a man with certain memories or associations becomes a man whose situation can be characterized by the fact that he is equipped objectively with certain theories or with certain information” (Popper, 1976, 102-103). This model of individual goals and beliefs is then ‘animated’ by individual motivations, but by what Popper calls *the rationality principle*: “‘Agents always act in a manner appropriate to the situation in which they find themselves.’” (Miller, 1983, 361). The idea is that, using both the rationality principle and our model of the individual person’s situation, we can predict how the person will act: in a manner that will serve their goals, given their beliefs.

Now Popper recognizes that the rationality principle is often not true. He says, “One has only to observe a flustered driver, desperately trying to park his car when there is no space to be found, in order to see that we do not always act in accordance with the rationality principle. ...Tests of a model...are not easily obtainable and usually not clear cut ...[This] roughness entails a comparatively low degree of testability.” (Miller, *ibid.*) Popper acknowledges that such a method faces many difficulties, but claims they can be overcome—without, however, showing how. If we

have two explanations, one of whose consequences are right 20% of the time, and another 30%, what are we to do? Here Popper is silent, and so does not really engage the problem of testability as we actually encounter it.

To make situational models actually testable, we need to include psychological theories, both of individual differences and of general human qualities. Let us look at another example of flustered drivers. Suppose that traffic authorities put a sign on a limited-access highway that reads ‘Last Exit to City,’ and ‘Next Exit 30 Miles’. Further, suppose the sign is placed so that it is seen only seconds before the exit. Following the work of psychologist Irving Janis (1989) on decision making under stress, we can predict, that a certain percentage of people will panic, attempt to swerve from the far lane heedless of the danger, and smash into other cars or side rails. Furthermore, we can predict that improved signage, properly placed, will reduce the frequency of crashes.

If we followed Popper’s advice, we would keep trying to produce models which assume that the crashing drivers are acting rationally. But these will not work, because these drivers are not in fact acting rationally—they are panicking. Why does Popper ban such subjective, irrational factors? In one place he attacks psychological hypotheses as “hardly ever criticizable by rational arguments” (Popper, 1976, 103). However, in the very same essay he, contrarily, characterizes psychology as a “social science” (op. cit., 101). Furthermore, he at times emphasized the importance of “psychological studies and discoveries... for the social scientist” (Popper, 1966, vol. II, 97). And Popper himself is author of an important psychological theory of how we learn from error! (For more on Popper’s contradictory attitudes toward psychology, see Berkson and Wettersten, 1984.) Popper’s views on testing in social science thus lead into a morass of contradictions about the role of psychology, and are not viable.

How can we, then, make theories in social science, including policy claims more testable, and actually test them? One false trail, which Popper rightly criticized, is simply looking for correlations in data, and avoiding theory, expecting it to arise inductively. What the relationship between correlations and causation is problematic, and, as Popper pointed out, we only learn what data mean when we have clear theories we are testing—and preferably more than one competing, testable theory.

A big cause of problems, I believe, has been the misleading example of Newton’s laws of motion. It is model of linear differential equations leading to complete predictions at a particular time and place. Once the ‘initial conditions’ of a particular situation were identified, then a single solution of Newton’s equations could be specified, and it would be possible, at least in principle, to predict events at any desired future time. This model of full prediction of individual events is extremely misleading. Even in physical science, the issues of ‘chaos theory’ have shown how limited this model is. An example is the snowflake. Because of the strong influence of random factors, every snowflake is different, and the exact configuration of any single snowflake impossible to predict exactly. But the fact is that the *pattern* of a hexagon is shared by almost all the huge variety of snowflakes.

This common pattern of snowflakes I think points to a larger truth, relevant to social events. Social events have myriad inputs from different individuals, with random variations. As a result, detailed predictions of specific future events are usually not possible. But it is still possible to predict patterns, and this is the more promising path for robust development of testable theories of social laws and social policies. We can try to specify what patterns are permitted and barred by a social theory, or what varieties of outcome are likely from a given social policy, and are unlikely.

An example of a ‘multiple possible consequence’ model is given by Erving Goffman in his book *Stigma*. Goffman describes some of the patterns of discussion used by both stigmatized individuals—who may have disabilities, criminal records, etc.—and those with whom they are conversing. One pattern is to hide the stigma as much as possible, so that it can be ignored. Another approach is to not hide it, but to ‘break the ice’ by joking about it, showing that the person stigmatized and the other person in the conversation need not worry about provoking embarrassment. We may make Goffman’s theory testable by taking it as an exhaustive list, and observing face-to-face conversations (such as by using one-way mirrors) to see whether all techniques of dealing with the stigma fall into one of types in the list. We may also assume that a few random exceptions may happen, but, say, less than one percent of the time. Then the theory of the patterns of interactions involving stigma becomes testable. If, indeed, it is refuted, the refutations will be highly informative as to how the theory should be further modified.

Overall, here are three ways to look for testable social patterns, without fully predicting individual events. First, we can follow the ‘chaos’ theory approach, using a non-linear mathematical law, and compare the predicted pattern with reality. Second, we can make a ‘multiple consequence’ model such as Goffman’s, where a specified variety of options are allowed. Third, we can look for a conditional prediction of patterns, where the pattern will depend on what prior conditions have evolved. In all of these, psychological theory can give us important clues. And, unlike Popper’s situational analysis that is animated by only the rationality principle, all three actually have promise of meaningful, testable explanatory theories of social events and policies.

Bartley and Justifying Arguments

Popper was blocked from exploring how rational inquiries should vary with the goal, and the diversities of resulting beliefs and decisions, because he accepted Bartley’s analysis of the heart of Popper’s own analysis. Crucially, Bartley had wrongly accepted Popper’s assumption that all people will adopt the same beliefs and decisions, given the same prior rational inquiry. Bartley claimed the heart of Popper’s message was that the only permissible process for weighing alternative solutions to a problem was winnowing down of options through criticism—justifying arguments should play no role at all. Bartley’s analysis had a big impact on Popper’s later elaboration of his views, and on the views of Popper’s followers. However, the influence was damaging both to the development and the reception of Popperian views.

Bartley’s (1962) *The Retreat to Commitment*, based on his PhD dissertation for Popper, was an attempt to generalize Popper’s analysis from natural science to rationality generally. Bartley’s

background was as a devout Protestant Christian, who wrestled with the debates over justification of belief in Christianity by ‘faith’ or by ‘works.’ He had been losing his faith in Christianity, though, and Popper’s praise of criticism struck him as a secular revelation that gave him something he could sustain belief in: the power of criticism. (This personal history I learned about in discussions with Bartley, when I was a student in a class of his.) Bartley lighted upon the supposed principle that only negative arguments are helpful. He said: “The rationality of a belief will be relative to its success in weathering serious criticism” (Bartley, 1962, 152). He opposed any attempt to identify the best or truest claims by seeing which are *justified*: derived as best on the basis of principles we already believe to be true. He wrote (op. cit, 147-8): “If all justification—rational as well as irrational—is really abandoned, ...[a] position may be held rationally without needing justification at all—*provided that it can be and is held open to criticism and survives severe testing.*” (Bartley’s italics.)

The problem with Bartley’s polar opposition of “non-justificationist criticism” and “justificationism” is that it is a false dichotomy. Not two options are involved, but at least four:

	Conclusive	Inconclusive
Positive	‘Justificationist’ argument	fallible justifying arguments
Negative	conclusive refutation	‘non-justificationist criticism’

Bartley put in opposition the two greyed-in options only: conclusive justification vs inconclusive criticism. He thus muddled two different dimensions: the form of argument—positive or negative—and whether the argument is claimed to be conclusive—compels agreement with the conclusion. Positive arguments attempt to derive a claim under question from other statements, accepted as true. Negative arguments attempt to winnow out correct claims from rivals by finding contrary evidence, accepted as true that refutes all rivals. Inconclusive arguments allow people to have diverse views and later revise their views, in contrast to requiring unanimity. To have positive, conclusive arguments thus requires unalterable commitment to the truth of premises; this is the logic behind what Bartley called the ‘retreat to commitment.’ Negative, conclusive arguments also would call for unalterable commitment to the truth of claims about refuting evidence. However, Popper himself rejected such claims (Popper, 1968, 29).

In muddling the two different dimensions, Bartley ended up condemning the wrong one. Bartley was right in rejecting the search for arguments that are both positive *and* conclusive. But the error isn’t in the form of argument—positive or negative—but rather in the demand for conclusiveness—that the argument must have the power to compel agreement.

Positive forms of argument, as well as negative, are perfectly legitimate, and often appropriate. An example of positive argument being beneficial is in the field of law, when judges and lawyers regularly argue over how to apply the law correctly to a particular case. The question is what ruling is justified by the law as written and the facts of the case. Such arguments shouldn’t be held out as forever conclusive—for a start, laws may change—but they are positive and also legitimate in this

context. If justificatory arguments on the basis of law were illegitimate, courts couldn't operate. The positive form of argument is also dominant in mathematics, where proofs are derivations from accepted axioms.

The law, ethics, and mathematics are not empirical sciences, but even in the empirical sciences positive arguments play a major role, in *applied science*—the application of foundational theories to more specialized problems. There are at least three different areas where such positive arguments are involved in science. First, in applied science. A physical chemist, for example, might write an article proposing new model of a molecule, and give predictions of its behavior, based on physical theory. An editor of a chemistry journal would expect the chemist to justify (derive) the prediction of the behavior of his new model on the basis of an existing best physical theory, and not some new untested physical theory. Second, in the discussion of social norms, such values as all having food security can guide development of policy. Third, predicted social patterns, such as we discussed above, can be used to assess which actions will lead to consequences consistent with our values, the social norms we endorse.

Popper had not focused on applied science, but only on the most fundamental and general physical theories, such as relativity and quantum theory. Popper was blocked from a better analysis of applied science by his acceptance of Bartley's view that only critical arguments are relevant to science, and indeed all rational discourse: "critical rationalism."

Popper's exclusion of positive arguments opened the door to Thomas Kuhn's rival claims. According to Kuhn, scientists normally apply a single existing 'paradigm' in their field without criticizing it. And they only give up basic assumptions with greatest reluctance, when 'anomalies' contradicting basic theory have accumulated, unintentionally, in the course of 'normal,' uncritical science. Kuhn's theory had some credibility, because most scientific researchers work on problems of applied science, which assume the truth of the existing most successful scientific theories. However, contrary to Kuhn, there has been in history of science no rule of lock-step following a single 'paradigm.' In important cases, such as the evolution of electromagnetic theory in the 19th century, there were long-time rival research programs, following rival world views, as I documented in my book (Berkson, 1974, 2014).

Conclusion

In the 1950s and 1960s, Popper and his followers discussed the role of metaphysical research programs, but they failed to note that these are positive, or justifying in their structure. In fact, some researchers look for only theories that assume—are justified by—the truth of a particular metaphysics or world view. This was the case for Faraday and Maxwell, as I describe in *Fields of Force* (Berkson, 1974, 2014). They based their theories and research on the assumption that fields of force existed, and rejected the "particles and action-at-a-distance" view.

The beliefs of scientists do influence what they choose to research, publish, and teach. And these are rationally informed by the tests of existing theories, both refutations and corroborations. They are also informed by positive or justifying reasons, such as whether a better theory might be

consistent with a preferred metaphysical world view. As I argued in my article ‘Skeptical Rationalism’ (Berkson, 1978), rational inquiry in either case does not dictate choices, but only influences them through logic and evidence. Popper was correct saying that acceptance of experimental results which have been repeated is a social “convention”. However, acceptance of a *theory* as corroborated by repeated testing doesn’t compel a researcher to accept its truth for the sake of his or her research. The researcher may suspect flaws in the theory, and do research at odds with it, in spite of its being corroborated. This illustrates that the effect of the results of research and reasoning on decisions will, and should, vary with the purpose of the scientist, and his or her judgements. Science is a reasoned enterprise, but its huge diversity and competitiveness is part of the secret of its creativity.

The same openness and pragmatism hold for rationality more generally: rational discussion guides, but does not determine choice, and the best process will vary with the goals and situation of the person or people initiating the inquiry. And in general, for social policies and theories, we will also need to look to predicting patterns, and not individual outcomes.

References

- Agassi, J. (1975). *Science in Flux*, Reidel.
- Bartley, W. W., III. (1962). *The Retreat to Commitment*. Knopf.
- Berkson, W. (1974, 2014). *Fields of Force: The Development of a World View from Faraday to Einstein*. Routledge, reprint: Library Editions: 20th Century Science, Vol. 2. Routledge.
- Berkson, W. (1978). Skeptical Rationalism, *Inquiry*, 22(1), 281-320.
- Berkson, W. (1989). Testability in the Social Sciences, *Philosophy of the Social Sciences*, 19(2), 157-171.
- Berkson, W., & Wettersten, J. (1984). *Learning from Error: Karl Popper’s Psychology of Learning*. Open Court.
- Goffman, E. (1986). *Stigma: Notes on the Management of Spoiled Identity*. Touchstone.
- Janis, I. (1989). *Crucial Decisions: Leadership in Policymaking and Crisis Management*. The Free Press, a Division of MacMillan.
- Miller, D. (1983). *A Pocket Popper*. Fontana Paperbacks.
- Popper, K. (1966). *The Open Society and Its Enemies*, 5th Edition. Routledge & Kegan Paul.
- Popper, K. (1968). *The Logic of Scientific Discovery*, Revised Edition. Harper Torch Books.
- Popper, K. (1976). The logic of the social sciences, In *The positivist dispute in German sociology*, ed. T. Adorno, et al., trans. G. Adey & D. Frisby, 87–104. Harper and Row.

The Metaphysics of Artifacts: a critical rationalist approach

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ABSTRACT

Artifacts are ubiquitous and influential in our world, but their nature and existence are controversial. Several theories have been proposed to explain the ontology of artifacts. Drawing on *Popper's theory of three worlds*, this paper suggests a *metaphysics* for artifacts along the line of a *critical rationalist* (CR) approach. This theory distinguishes between three realms of reality: the physical world (World 1), the mental world (World 2), and the world of objective knowledge (World 3). The paper argues that artifacts have different ontological components that correspond to these three realms, and that each component is real and causal. The paper shows how this perspective can account for the *intentional* and *functional* aspects of artifacts, as well as their dependence on *plans* that influence different realms of reality. The paper explains how this pluralistic ontology, compared to the rival theories, enables one to explain the relevant ontological problems of artifacts. The paper also explores how this proposal can lead to a research program encompassing a broader range of technologies, such as social artifacts. In sum, the paper suggests that Popper's three worlds theory provides a rich and comprehensive framework for understanding the metaphysics of artifacts.

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1. Introduction

We often use technical artifacts such as computers, cars, mobiles, and the like, which play an essential role in our daily life. It seems their influence on our form of life is very different from the past (Winner, 2010, section 1). There have also emerged philosophical problems about the ontology of artifacts: Are artifacts ontologically different from physical and natural kinds? What is the difference between artifactual and natural kinds in formation and evolution? How are artifactual kinds classified? What is human intentions' role in inventing and evolution of artifacts? How is the intended function of artifacts related to their physical structure?

To answer these ontological problems, we need a theory about the ontology of artifacts, i.e., their *metaphysics*. There might be competing metaphysical views. Although these views are unfalsifiable, they need to be criticizable. They can be evaluated in terms of their ability to solve the problems which they are designed to solve. Moreover, one has to assess whether they conflict with our other metaphysical presuppositions. An adequate metaphysics has a heuristic role in formulating problems and suggesting future research programs (Popper, 1983a, Agassi, 1975a, Shearmur, 2010). Therefore, adequate metaphysics for technical artifacts is expected to explain the aforementioned ontological problems. It should also give an understanding of how to change and modify artifacts and especially should be able to determine the place of scientific theories in the criticism and modification of technologies.

In the past few decades, several theories have been presented about the metaphysics of artifacts, and new aspects of their ontology have been explored. Although these theories consider the various components of the ontology of artifacts, they do not present a coherent metaphysical structure that explains how these components are intertwined. Consequently, their explanatory power is undermined. This article aims to explain their intertwined ontological structure within the *critical rationalist* approach, especially with *Popper's theory of the three worlds*, and to point out some consequences.

The structure of this article is as follows. In section 2, we give an overview of the theories about the metaphysics of artifacts and briefly point out their explanatory shortcomings. Then, in section 3, we provide a brief explanation of Popper's theory of the three worlds, and using it in section 4, we discuss the ontological components of technical artifacts. In the fifth section, we explore the consequences of this ontology. The final part is the conclusion.

2. Metaphysics of Artifacts: An Overview

The metaphysics of artifacts and related problems have been considered a serious field of study since the end of the 20th century. At that time, the *philosophy of technical artifacts* (Houkes et al., 2011, 198) emerged as a field within the philosophy of technology. One of the reasons that many of these philosophical problems were ignored for years was that artifacts were not considered ontologically independent from natural objects.

Beth Preston (2022), in the “artefacts” entry of the *Stanford Encyclopedia of Philosophy*, points out that “skepticism about the existence of artifacts goes back to Aristotle.” Referring to some of

Aristotle's works, she says, for Aristotle *only* things that have an independent substance, such as animals and plants, exist by nature,¹ However artifacts do not exist in this sense; they need *intentional agency* (*Metaphysics* 1033a ff., 1043b15–25, *Nicomachean Ethics* 1140a ff., *Physics* 192b ff, 192b 8–39; *Physica*, Book II, 192b 9–18; 192b 28).

Although there is an agreement on the intentional aspect of artifacts, which also includes artworks (Davies, 1991, 120–141; Levinson, 2007, 81–82 & Hilpinen, 1993: 156–157), the ontological status of the artifacts has remained ambivalent until modern times. For example, As Preston (2022) explains, Peter van Inwagen (1990) thinks that determining the ontological status of artifacts requires an answer to “the Special Composition Question—under what conditions *do* unified wholes arise out of parts?” He maintains that a composition cannot be considered to really exist, unless something is added to the world. As Preston sums up “Considerations of this sort have been used by van Inwagen (1990, 124 ff.) and others to argue that there are no artifacts. [Artifact] makers do not bring anything new into existence; they merely move pre-existing elementary things around.”

On the other hand, Lynne Rudder Baker (2007, 32, 53–55) believes that the idea of 'composition' is that if a primary kind of something is combined with another kind in a specific arrangement, a new thing with new causal powers is created. For example, if a piece of metal is painted red in the form of the word 'stop', a traffic stop sign is constructed as a new reality with a new causal power. Therefore, according to Baker, artifacts are *intention-dependent* objects.

Amie Thomasson (2007, 2009) emphasizes the intentional component of artifacts by focusing on the importance of artifacts' 'application conditions.' For example, a 'screwdriver' refers to a tool intentionally made by humans to turn screws, consisting of a handle and a chamfered edge rod. A quick look at any workshop will assure you that this function is, in fact, satisfied and, therefore, the screwdrivers exist as an artifact. In her opinion, since the intentional states of makers play an indispensable role in the application conditions of the artifact, the nature of all kinds of artifacts cannot be determined independently of the makers' intentions (Thomasson, 2007, 58, 53).

Since the purpose of artifacts is to fulfil a *function*, many philosophers of technology have studied the concept of 'function' and its role in the ontological explanation of artifacts. *The causal role theory* and *intentional theory* have received more attention among them.

Causal role theories, like Cummins' theory (1975), analyze functions only in relation to interacting physical structures, in the sense that only causal interactions in the physical world determine the function of an object. For example, the function of holding food on a plate depends solely on its physical structure. These theories have no reference to intentional factors.

On the contrary, *intentional theories* consider objects as 'functional' to the extent that they participate in the realization of the agents' intention; that is, an object ontologically is considered

¹ Katayama (1999: 18–19) has argued that it is not entirely clear why Aristotle thinks artifacts are not substances, and different reasons can be found in different places of his works.

as an artifact, insofar as an agent has intended a function for it.¹ For example, a chair is considered as an artifact kind as long as it is intended as an implement for sitting; otherwise, it would be simply some pieces of wood or metal. For intentional theories, see Neander (1999), Dipert (1993), Searle (1995) and McLaughlin (2001).

The causal role and the intentional theories received criticism.² One specific context of this criticism was the Dual Nature of Technical Artifacts program, developed by several Dutch philosophers. This program starts from the observation that artifacts are described in terms of their structure as well as their function. This suggests that technical artifacts have a dual nature: designed physical structures, and functions intended by humans. As Kroes (2006, 2010) explained, a functional description is only a partial description of a technical artifact, because different physical structures may realize the same function (multiple realizability). On the other hand, a structural description that ignores the functional properties of artifacts does not specify what the technical artifact is intended for, and hence ignores its design properties. In addition, the functional aspect of artifacts cannot be reduced to the capacities of physical reality; for example, to the dispositions of physical reality. Because the functional aspect has an intentional component intimately related to human aims and values. Therefore, the description of an object as a technical artifact should comprehensively include both structural and functional descriptions, and none of them alone is sufficient (See: Perlman, 2004; Kroes and Meijers, 2006; Kroes, 2002, 2009, 2010; Meijers, 2011; Houkes & Vermaas, 2009, 2013; Vermaas & Houkes, 2003; Vermaas et al., 2011). Granted the role of artifacts' function, Houkes and Vermaas (2010) attempted to incorporate a concept that is called 'use plan' into their theory and conclude 'function' from it. According to them, the design process consists of making and interacting with use plans designed to fulfil a function. The artifact's function is not fulfilled by the causal relations in the physical structure, nor simply by the intentions of the agents; rather, their function is an utterly relational feature that supervenes on both the physical composition of the artifact and makers' actions and beliefs. (Houkes et al., 2002; Houkes & Vermaas, 2004: 67).

According to this theory, the design of a technical artifact includes the process of providing a *plan*. It also gives a description of the physical structure (the 'blueprint'). The design of a technical artifact identifies its *teleological nature*, which is an answer to the question what is it for? Design, in this sense, is a purposeful arrangement to fulfil a function in a *specific situation*. Therefore, the function has a *regulative role* for a designer. It guides the designer toward the appropriate choice of physical materials and design methods to fulfil the intended function. Accordingly, something cannot be considered an artifact unless we know what function it is to fulfil (Vermaas et al., 2011, 29-37).

¹ Agents need not be restricted to humans. For example, Popper and Miller take animal artifacts and constructions such as bee or chicken nests or spider webs, and beaver dams also as technology (Popper, 1979: 115).

² For some related criticisms see (Preston, 2009).

Accordingly, in recent theories, it has been rightly emphasized that the function of technical artifacts is closely related to human intentions. Therefore, the agent's intention is relevant to artifacts' nature or metaphysical structure.

Although we expect metaphysics to explain how the ontological components are related, the theories thus far mentioned have some drawbacks in this regard. Firstly, they are unclear about the relationship between artifacts' physical and functional components. Therefore, they have not been able to explain these components in an integrated metaphysical structure. Secondly, although the importance of design has been more or less emphasized in these theories, the ontological status of the *plan* is ambiguous. It is, at most, an idea in the designer's mind. Moreover, the ontological difference between 'plan', which is objective, and 'intention', which is subjective, is unclear. This ontological ambiguity makes these theories unable to explain the causal role of 'plan', especially *unsuccessful plans*.

In addition, the dynamics and evolution of artifacts take place in their ontological framework. However, unclear metaphysics cannot provide adequate insight for change and modification of the artifact, and this inadequacy makes designers' interventions more unpredictable. In this way, metaphysics loses its *heuristic power*. Because when metaphysics ignores a realm of reality, or does not provide a correct description of how different realms of reality interact with each other, it is impossible to have a correct estimate of the amount of influence of artifacts on reality. For an adequate explanation, the ontological components of artifacts should be designed in a more comprehensive ontological framework. This article claims that Popper's three worlds theory can provide such a ground. In the next section, we briefly explain this theory.

3. Popper's theory of three worlds

Popper believes that "what is real or what exists is whatever may, directly or indirectly, have a causal effect upon physical things" (1978, 153). Through this, Popper defends a pluralistic view, in contrast to a monistic or dualistic view, of reality, where there are at least three different, but interacting worlds: World 1, World 2, World 3.

World 1 consists of physical bodies like stones and of stars, and of plants and of animals. It also consists of radiation, and of other forms of physical energy.

World 2 is the mental and psychological world. It is the world of our feelings, pain and pleasure; of our beliefs, desires, and intentions; of our perceptions and observations. In other words, it is the world of psychological processes, mental states, or of subjective experiences. For Popper, World 2 is immensely important, especially from a humanistic or moral point of view. Because "Human suffering belongs to world 2; and human suffering, especially avoidable suffering, is the central moral problem for all those who can help. World 2 could be subdivided in various ways" (1978, 143). If we wish, we can distinguish fully conscious experiences from subconscious experiences, or human consciousness from animal consciousness (1978).

World 3 is "the products of the human mind: such as languages; tales and stories and religious myths; scientific conjectures or theories, and mathematical constructions; songs and symphonies;

paintings and sculptures. But also, airplanes, airports and other engineering artifacts.” Moreover, Popper emphasizes that “not only maps and plans are world 3 objects: plans of action are too; and this may include computer programmes” (1978, 163).

Many of the World 3 objects, like books, drugs, computers or airplanes, are embodied in World 1 objects: they are material artifacts that belong to both World 3 and World 1 (Popper & Eccels, 1985, 41). Popper says (1978, 144-145):

“Michelangelo's sculpture *The Dying Slave* is both a block of marble, belonging to the physical world 1, and a creation of Michelangelo's mind, and as such belonging to world 3. The same holds of course for paintings [and other artifacts]. ... If we discuss the influence of the American Constitution on the life of the American people or its influence on the history of other peoples, then the object of our discussion is a world 3 object; similarly, if we compare the often very different performances of *one* dramatic work, say Shakespeare's *Hamlet*.”

Most of the inhabitants of World 3 are embodied in one or many physical objects of World 1. A great painting may exist only as a ‘unique’ physical object, although there may be some good copies of it. By contrast, Hamlet has been embodied in all those physical volumes that contain an edition of ‘Hamlet’. Likewise, technical artifacts, such as chairs, knives, and airplanes, are embodied in a physical object.

In other words, the objects of world 3 are not fictitious, they are *real*, and their physical embodiments or realizations are *concrete* objects. They are *real* because they can have a *causal effect* upon us; upon our World 2 experiences, and on our World 1 objects of our brains. They may have causal effects upon World 1 (physical objects) through World 2. Therefore, Worlds 1, 2, and 3 can interact, and none are causally closed.

Popper gives us an example to understand how the three worlds interact: We may say that, some physicists (Szilard, Fermi, and Einstein), based on their knowledge about World 1, suspected the physical possibility of making a nuclear bomb, and that their thoughts (in World 2) eventually brought about the realization of their conjectures. To Popper, such descriptions hide the fact that by ‘their knowledge about world 1’ are meant *theories* that can be objectively investigated from a logical and empirical point of view, and therefore they are World 3 objects rather than World 2 objects (though they can be grasped and thus have World 2 correlates). Similarly, ‘suspected the physical possibility’ refers to conjectures about physical theories - again World 3 objects which can be investigated objectively (Popper & Eccles, 1985, 47). In other words, physicists can learn about nature and reveal its capacities through the World 3 objects. Technologists interested in these capacities suggest plans to make use of these capacities for intended purposes. These technical plans are among World 3 objects that, through World 2, may bring about an atomic bomb that make a change in World 1. Therefore, even the unembodied World 3 objects may be the source of a causal effect in order to change World 1, and because of their indirect causal influence upon

material world 1 objects, we should regard world 3 objects as real. Popper maintains this *influence* is always *indirect* (1978, 164):

“World 3 theories and World 3 plans and programmes of action must always be *grasped* or *understood* by a *mind* before they lead to human actions, and to changes in our physical environment, such as the building of airports or of aeroplanes. ... Thus, in order that Special Relativity could have its influence upon the construction of the atom bomb, various physicists had to get interested in the theory, work out its consequences, and *grasp* these consequences. Human understanding, and thus the human mind, seems to be quite indispensable.”

World 3 may influence or *cause* people to think and criticize. In fact, critical cooperation in planning is one of the characteristics of World 3 objects. And this is another argument for the objectivity of world 3 objects. It is clear that plans, in this critical cooperation, mean the world 3 objects, rather than the concrete thought processes or mental states of the cooperating people. Therefore, critical cooperation in an abstract plan presupposes its objectivity. ‘Moreover, saying that a plan can be improved through criticism, refers to “an aspect of world 3 objects which makes them again similar to world 1 objects: it is possible to work on a world 3 object, almost as a mechanic works on an engine, and to improve its performance” (ibid, 163).

3.1 Some Historical Remarks

Considering abstract objects as real is not unprecedented in the history of philosophy. As Popper himself acknowledged, “Plato was the discoverer of the third world. Plato discovered not only the third world, but part of the influence or feed-back of the third world upon ourselves” (1979, 122). He also points out the similarity of Hegel's Ideas with his own world 3.

However, the differences between Popper's theory of three worlds and Plato and Hegel's theories are very serious and have significant consequences, especially in our discussion about artifacts.

Popper's World 3, unlike Plato's world, is man-made and changing. In addition, it contains not only true theories and successful plans, but also false theories and unsuccessful plans (1979, 122). The result is that unsuccessful plans are also real and can be the source of causal effects.

In addition, Popper emphasizes “the fact that Hegel's ‘Objective Spirit’ and ‘Absolute Spirit’ are subject to change is the only point in which his Spirits are more similar to my ‘third world’ than is Plato's world of Ideas” (125).

The differences between Popper's world 3 and Hegel's ‘objective spirit’ and ‘absolute spirit’ are serious: In Hegel's theory, “man is not creative. It is the hypostatized ‘Objective Spirit’, it is the divine self. consciousness of the Universe, that moves man. Thus, what I have called the autonomy of the third world, and its feed-back effect, becomes with Hegel omnipotent.” (ibid).

Marx, unlike Hegel and Plato, inspired Popper for the ontological primacy of World 1 over consciousness and Ideas (in addition to the influence of Darwin's theory of evolution). The

entanglement of artifacts in a critical labor praxis can be seen as an implicit continuation of Marxian approaches by Popper.¹ So for Popper “the individual creative element, the relation of give-and-take between a man and his work, is of the greatest importance.” (125-126).

But Popper went beyond the Marx's dualism, by taking the pluralistic approach, different from Plato, to retain the autonomy for both Worlds 2 and 3. “while Plato lets his hypostasized Ideas inhabit some divine heaven; Hegel personalizes his Spirit into some divine consciousness,” Popper’s World 3 “... has no similarity whatever to human consciousness; and though its first inmates are products of human consciousness, they are totally different from conscious ideas or from thoughts in the subjective sense” (126).

Being man-made and objective are prominent features of Popper's ontology, which provide the capacity for inter-subjective criticizability of artifacts by individuals, while Plato and Hegel’s theories are poor and obsolete in this regard. The significance of this point in the discussion of artifacts lies in the fact that if we pursue democratic control of artifacts, we need an ontology that is open to change. According to Popper, “the *openness* of the material World 1 to influences from outside [World 2 and World 3] is just one of those things which experience shows us constantly. Thus, there is no reason to think that human brains have changed much in the last hundred years; but our material environment has changed beyond recognition both through our planned actions and through the unintended consequences of our planned actions” (1978, 165). Moreover, the suggested ontology should provide at least the objectivity of plans and designs in the sense provide the capacity for inter-subjective criticizability of them among individuals.

4. A critical rationalist’s conception of technical artifacts

Although there is no independent study about the ontological status of artifacts in Popper’s works, as we mentioned in the previous section, his view can be developed through the examples he provided in his illustrations for the theory of three worlds. First of all, it is worth noting that Popper had repeatedly warned that ‘what is’ questions could fall into the abyss of fruitless verbal and conceptual discussions (Popper, 2002, 24-25). Therefore, the main problem regarding artifacts is not the conceptual analysis of ‘artifact’, instead, we need a theory about artifacts to deal with their ontological problems.

In the critical rationalist approach, contrary to Peter Kroes² (2010, 52-53), we do not start from the *behavior* of engineers to discover what engineers think of a technical artifact. In his *The Logic of Scientific Discovery*, Popper has argued in detail against such a *naturalistic* approach (2005, 29-34). So, the theory we suggest here for the ontology of technology artifacts does not rely on

¹ We owe this point to the helpful comments of an anonymous referee.

² Kroes says: “The starting point for my analysis of the nature of technical artefacts is the way engineers describe and conceive of technical artefacts. The reason for turning to engineering practice is that engineers are experts in designing, making, analysing and describing technical artefacts and so their way of describing and conceiving technical artefacts may be taken to be a fruitful anchor point in our quest for the nature of technical artefacts.” (2010: 52)

engineers' behavior; It is ultimately a conjecture¹, which is presented and evaluated in relation to the intended function of artifacts.²

4.1 Interaction of the three worlds

The theories above are unclear regarding the relation between artifacts' physical and functional (or intentional) components. They give no account of this relation under a coherent theory. Kroes and Meijers also acknowledge that if we consider 'function' as a mental model, the relationship between these models and the physical structure is not clear (Kroes & Meijers, 2006, 2).

In addition, although the importance of planning and design is more or less emphasized in these theories, there is still an ontological ambiguity here. 'Plan', in these theories, is in the designer's mind, and there is no clear ontological distinction between 'plan', which is objective, and 'intention', which is subjective. This ontological ambiguity makes these theories unable to explain the causal role of plans, especially those plans that have not been successful.

There is an insightful explanation for the interactions between the three realms of reality in the three worlds theory: World 3 influences World 1 through World 2 (Popper, 1979, 155). If we apply this account in the context of artifacts, we could say that the intentional component related to world 2 can affect world 1 based on the plan designed in World 3. Indeed, not only embodied artifacts, also technological plans and designs that reside in World 3 affect the physical world through intention (which is in World 2).

Just physical reality and intention, without even a primitive plan, are not enough for something to be a technical artifact. Moreover, an intention may be realized through different plans; And through these different plans could have different causal consequences. Although plans are not implemented without the agent's intention (which is in World 2), they have a reality which is independent of the physical reality and the mind, because they have causal power.

Therefore, an artifact's function results from how physical reality is arranged, which is incorporated into the plan, which in its turn, is in World 3. So, the 'function' is a kind of abbreviation to express that this particular arrangement of physical reality in accordance with the plan, brings about a change in reality, provided there is a human intention to implement it.³

4.2 The reality of unsuccessful plans

It is not always the case that the aims of the designers come true. In many cases, plans are *not* successful and do *not* lead to the intended results. In this case, there is no artifact. So, Thomasson

¹ Being conjectural does not rule out the possibility that this conjecture might have been inspired by studying the behavior of engineers. It means that the behaviorism does not *justify* it. The main point is that this conjecture is presented and evaluated in the first place based on what is the purpose of making the artifacts.

² This is similar to Kant's *transcendental* approach. In fact, the problem is, what are the conditions for the existence of the artifact? If something has to be constructed to satisfy some specific needs, there need to be some *conditions* on their ontology, which we want to discover.

³ Houkes and Vermaas (2010) developed a similar idea in their theory of functions. However, they stated it in terms of 'beliefs', which, according to CR, are inmates of world 2.

(2003, 2007) refers to the importance of ‘success’ regarding artifacts. Although *unsuccessful* designs have the World 3 component and are (conjecturally) suggested to fulfil a function, they do not designate an artifact. Maybe later, after criticism and modification, they would be implemented as a successful plan and could be among the artifacts. Therefore, the ontological components of the artifact need to be coordinated in such a way that the aims of the designer to be ‘successfully’ realized; otherwise, they remain merely a plan. However, even unsuccessful designs, although they did not lead to the construction of the desired artifact, could have a causal effect, and in doing so they are part of the reality of the World 3. They influence other people's minds and can inspire new ideas or even lead to some reactions.

It is unclear how to explain their causal effect if we do not take 'unsuccessful' plans as *real*.¹ One may argue that an explanation could refer to the *memories* of unsuccessful past events. This response moves the debate to the materialist vs. dualist interactionist contentions, which Popper extensively argued about it in the *Self and its Brain*. But one of his arguments in his *Objective Knowledge* might be more relevant here. It is a thought experiment: Suppose a nuclear war occurs, and all humans die. So human memories also disappear. He proposes two hypothetical scenarios: In the first scenario, all libraries are also perished, and in the second one, the libraries remain. Popper argues that, in the second scenario, unlike the first, if intelligent beings come to the earth from outer space, human civilization could be reconstructed by reading and deciphering the books. In his view, the second scenario shows that the products of the human mind, such as theories, problems, and technical plans, have an autonomous reality (1979, 116).

4.3. The relation of physical reality and artifact

Functional and physical characteristics are not independent, because the function and the structure of technical artifacts mutually restrict each other. In other words, every structure of reality cannot fulfil every function. A function cannot be realized if there is no capacity in reality for it. Science can show us new capacities of reality by a *description* of reality. Moreover, by discovering the *limitations* of reality, science can show the infeasibility of some technologies (Paya & Mansouri, 2018). For example, quantum mechanics reveals new capacities of reality, which can inspire the creation of new technologies such as nuclear power plants, and on the other hand, it also shows the limitations of our measurement with *the principle of uncertainty* and excludes the possibility of creating technologies beyond this limitation. As Popper explains, science, with laws such as energy conservation, identifies the limits of reality and undermines attempts to construct some technologies like the perpetual motion machine (Popper, 1944, §20; Miller, 2006, 119-121).

To sum up, Popper's theory of the three worlds includes all physical, intentional, and plan components, without which a technical artifact is not realized. Therefore, the technical artifact has a multiple nature, it is an intertwined reality of W1, W2, and W3.

¹. Ignoring ‘unsuccessful’ plans is similar to ignoring ‘falsified’ theories as part of *scientific* theories. As you know, unlike Whewell and others, Popper emphasized that falsified theories are also scientific, and as part of the third world, have causal power, so it is not correct to consider only true theories as scientific.

5. Consequences of the multifaceted nature of technical artifacts

Artifacts have no independent essence. The 'mind-independent essence' constitutes the existence of those entities that we have no role in their creation. For this reason, natural beings have 'independent essences'. But artifacts are made to realize the functions we intended for our needs.¹ Therefore, their reality depends on the maker's or user's intention.² An object cannot be a technical artifact just because of its physical characteristics. A technical artifact usually requires functional aspects intended by humans. These functions are among the causal effects of artifacts, but since these causal effects depend on the human intention located in World 2, they act only through intentions. In this respect, they ontologically differ from natural and physical objects. Therefore, technical artifacts are relational entities, i.e., they are entities with 'intention-independent essence' (Meijers, 2001).

It may be argued that being *real* requires mind-independence, and therefore artifacts whose identities depend on the mind should not be considered real; they are merely *nominal* and *conventional* kinds (Schwartz, 1978). Their reality somehow depends on us. In this line of argument, the ontological status of artifacts (as well as social objects and institutions like money or marriage) has been challenged due to their dependence on intention (Wiggins, 2001, Zimmerman, 2002 & Lowe, 2014).

In response to such criticisms, there have been attempts to suggest mind-independent natures for artifacts (e.g., Elder, 2007). But such a stipulation for reality has been challenged in several ways, and we do not go into their details (see, for example, Baker, 2007; Thomasson, 2007; Juvshik, 2021a). It is sufficient to say that according to Popper's theory of three worlds, the *mind independence* requirement for being *real* is *not* plausible. Both World 2 and World 3 are related to the mind, but they are real because they have *causal power*.

The problem of being a 'kind of' artifact. Now a question arises: if intrinsic artifacts are not independent of the agent's intention, what makes them a special *kind of* artifact? What is the essence of the artifact as a 'kind'? Whose intentions make the artifact belong to a particular 'kind'?

Assume a person sees an object, thinks he has a good screwdriver, and uses it well to turn a screw. Therefore, the object has the physical capacity to turn the screw. Do the physical capacities of the object and user's mental state alone suffice to transform this object into a screwdriver and categorize it as a 'screwdriver kind'? While the object in question may actually be a knife that happens to be used as a screwdriver.

Therefore, an artificial device designed to realize a specific function may be used by an individual or a community of users to fulfil another function. For example, chairs can be used as a stepladder, anvils can be used as a doorstop, and a knife may be used to turn a screw. Therefore,

¹. For discussion on the state of the artifact function literature, see Preston (2009), Koslicki (2018, ch. 8), Olivero (2019), and Juvshik (2021a, b).

². According to critical rationalists, 'essence' is a category that we *conjecture* to identify what constitutes the existential capacities of natural entities. Thus, they labelled it 'conjectural essentialism' or 'modified essentialism'. (Agassi, 1974, 1975b; Maxwell, 1993).

although the function of artifacts makes them unique, it is not their essence. It is even possible that some artifacts, like the artworks in the arts, especially in modern or conceptual arts, are made without intending a *function* for them; they are not for anything, but are instead ‘art for art’s sake’ (Juvshik, 2021b). Therefore, the intention-dependent essence of the artifact is not reducible to a specific function, and *functional essentialism* about artifacts is not defensible (Houkes and Vermaas, 2004; Juvshik, 2021b).

Kroes (2010) believes that in these situations, it seems complicated to defend that the psychological conditions of this user are ontologically relevant. According to him, the user's mental states cannot transform the object (i.e., the knife) into a screwdriver. Such a position seems to result from the functional essentialism we argued against. Also, what makes an artifact a *kind of* ‘knife’ in the first place? Is it because it is used as a knife in a particular society, or because a group designed and made it as a knife? In the first case, the users’ intention is ontologically relevant, and in the second case, the intention of the designers and makers.

For example, some users use a knife to turn screws. Is the existence of a standard form of collective use sufficient to create an ontological difference? In other words, should there be an essence for ‘screwdriver-ness’, or is the intention of a specific person (or persons) relevant in determining the essence of the artifact?

In this controversy, we should not conflate ontology and semantics if we want to proceed according to critical rationalism (CR). ‘Knife’ as an ontological artifact has ontological components in Worlds 1, 2 and 3. But what gave the name of the object ‘knife’, or classified it under a category called ‘knife’, traces back to the naming ceremony of that object through a causal chain. Neither a knife nor a screwdriver, as a technical artifact, has an ontologically intention-independent nature. But calling something ‘knife’ or ‘screwdriver’ is a linguistic matter related to the semantic network that the speakers of a language (both the manufacturers and the users) agreed upon. Artifact ontology is indifferent to who intended an object to be an instance of a particular kind of artifact. This thesis just asserts that human intentions are related to that object and that its essence is mind-dependent.

It might be said that there is a difference between ‘creating’ (i.e., designing and making) and ‘using’ a kind of technical artifact. Invention of an artifact, whether as a new instance of an already existing kind or the first instance of a new kind of artifact, has ontological significance because new objects enter the world in this process. According to CR, a plan or model presented as a conjecture, at the first stage, is created in World 3, and then is executed and implemented. These objects are individually or socially constructed, they are not intention-independent entities. The manufacturer or designer intends them to fulfil a function.

In the ‘use’ phase, the conditions are slightly different. No new technical artifact is created when someone uses a screwdriver to turn a screw, but he may use an already existing artifact in the context of another plan. For example, he may creatively use an existing natural or artifactual object: a coconut shell may be used as a drinking cup, or a piece of wood may be used as a lever, or a knife may be used as a screwdriver. In these cases, creativity is limited to assigning new functions to

existing objects, but no new physical objects or artifacts are created. 'Creativity' also refers to comparing designs in the world of artifacts and discovering similarities for using an artifact in the place of another one.

Although these explanations show the importance of design and its autonomous reality in the World 3 and the intertwining of different components of reality in the ontological constitution of artifact, however, naming an object as a special 'kind' of artifact, traces back to the semantic network of its designers and users. This semantic network is affected by the ontology of the artifact, that is, the members of the semantic network, based on the intentional aspects and history, connect the artifact, through a causal chain, to an event (similar to the naming ceremony) that the artifact for the first time designed for the purpose realizing a function, and there is an agreement regarding the 'kind' of the artifact.

Therefore, artifact kinds have no 'intrinsic essence' common to all artifact kind members. Instead, the construction of the semantic network determines the artifact's membership in a particular kind. For 'artifact' to be considered a specific kind, a semantic network must be created about it. Those who have access to this semantic network see the desired 'artifact' as the kind that this semantic network considers, or they see it as another artifact kind according to their own semantic network, or, in the absence of a semantic network that can adapting to it, they see it as just a 'thing'. This is also the case for 'knife' and 'screwdriver'. Therefore, it cannot be said that the criteria for belonging to a certain kind of artifact are determined by the person (or persons) who made the first product. As Thomasson emphasizes, artifact kinds 'are notoriously malleable and historical in nature' (Thomasson, 2007, 62).

This problem also relates to the identity conditions of artifacts. The *kind* of artifact that two manufactured products belong to may depend on the semantic network and the context, and may not have a decisive answer. We rejected functional essentialism. Therefore, we cannot say that an artifact remains the same *kind* just because its function does not change when some or many of its parts are changed. In complex cases, even when two products have the same shape, fit and function, they may be made based on different plans and therefore be considered examples of different kinds of artifacts. This problem leads us to say that being a member of a kind depends not only on the structural features of the artifact but also on its semantic network and intentional history.

The unintended consequences. In addition to their intentional component, artefacts, such as plastic bottles, can have unintended causal effects on the ecosystem, such as pollution.

But the unintended consequences are not only limited to the material and physical components. Constructing an artifact may lead to reactions, from other intentional organisms in the environment, that the designer did not intend. These cases illustrate the extent to which technical artifacts are apt to have unintended and unpredictable causal effects—especially if they are placed in an environment that includes other intentional minds. In his works, Popper repeatedly emphasized the influence of World 3, through World 2, on World 1 and considered it as one of the reasons for the openness and uncertainty of the world we live in (Popper, 1973, 1979: 206, 1985). The openness of the world and the emergence of unintended consequences can be explained through the causal

relations of the three worlds. This metaphysics demonstrates that we need institutionalized criticism in all stages and processes of planning, implementing, and developing artifacts to reduce and control unintended consequences.

6. Conclusion

This paper presents different ontological components of artifacts in light of Popper's three worlds theory. Each of the ontological components is real because it has a causal effect on reality. Therefore, the metaphysics of artifacts is an intertwined ontology that includes different realms of reality: Worlds 1, 2, and 3. This metaphysics seems to provide an adequate ground to account for the ontological problems of artifacts in several ways:

First, it suggests a rich enough ontology for accounting artifacts' intentional and functional components and their related problems.

Secondly, it has the capacity to explain the causal influence of plans on different realms of reality. Moreover, it suggests an intermediary role for World 2.

Third, CR leads to a research program that can encompass a broader range of technologies, because it does not limit the realm of reality that technology can intervene in to the physical reality. Reality can be physical (World 1), mental (World 2), or abstract (World 3). For instance, some technologies are designed to fulfil a function by manipulating mental states or incepting some ideas in the mind.¹ Therefore, this ontology can be extended to social technologies such as propaganda, advertising, media, and legal infrastructure. For example, 'money' can be considered a kind of technological product whose reality does not rely only on physical reality, and as Searle (1995) shows, it fulfils the intended function by the legal rules that rely on collective intentionality.

Fourth, metaphysical theories that only recognize the physical and mental worlds as reality have trouble explaining the objective aspect of plans. In contrast, by distinguishing between Worlds 2 and 3, CR offers a suitable framework for the critical dialogue among actors in different situations and the intersubjective evaluation of technologies, which is crucial for the democratic oversight of technologies.²

The fact that (social) artifacts have an intentional component makes them liable for applying Popper's *situational analysis*. Popper used this methodological tool to analyze institutions (as social artifacts) in social sciences and historiography. Moreover, his approach was an application of *methodological individualism*.³ We limit our discussion here to the metaphysics of artifacts and leave out these epistemological aspects, which are beyond the scope of this paper. However, we think employing these epistemological considerations regarding the artifacts could bring about a

¹. For example, *Inception* and *Matrix* are two films sketching the manipulation of mental states. However, the feasibility of implementing these technologies depends on whether reality has such a capacity. Propaganda or brainwashing projects also indoctrinate ideas by which affect future behaviors of people.

² For the importance of democratic control of technology in the critical rationalist approach, see: (Agassi, 2005).

³ For Popper's *situational analysis* and *methodological individualism* see: (Popper 1976: 102; 1950: 288-289; 1957:149;1983b; Koertge 1979: 87)

new research program about the evolution and development of artifacts in the philosophy of technology.

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References

- Agassi, J. (1974). Modified conventionalism is more comprehensive than modified essentialism. in Schilpp, P.(ed.) *The philosophy of Karl Popper*, The Library of Living Philosophers. Open Court. pp. 693-696.
- Agassi, J. (1975a). Scientific Problems and Their Roots in Metaphysics. In *Science in Flux: Boston Studies in the Philosophy of Science* (Vol. 28). Springer, Dordrecht.
- Agassi, J. (1975b). Modified Conventionalism. In *Science in Flux*. Springer, Dordrecht, PP. 365-403.
- Agassi, J. (2005). *Technology: social and philosophical Aspect*. Dordrecht, Lancaster: D. Reidel.
- Aristotle. (1970). Physica. in *The Works of Aristotle*, Vol. II, D. Ross (ed). Clarendon Press.
- Aristotle. (1984). Categories, Nicomachean Ethics, Metaphysics, Physics. In J. Barnes (ed.), *The Complete Works of Aristotle*, Vols. I & II. Princeton University Press.
- Baker, L. R. (2007). *The Metaphysics of Everyday Life: An Essay in Practical Realism*, Cambridge University Press.
- Cummins, R. (1975). Functional analysis. *Journal of Philosophy*, Vol.72, PP. 741-765.
- Davies, S. (1991). *Definitions of art*. Cornell University Press.
- Dipert, R. R. (1993). *Artifacts. Art Works, and Agency*, Temple University Press.
- Elder, C. L. (2007). On the place of artifacts in ontology. In Margolis, E. & Laurence, S. (eds) *Creations of the Mind: Theories of Artifacts and Their Representations*, Oxford University Press.
- Hilpinen, R. (1993). Authors and artifacts. In *Proceedings of the Aristotelian Society*, Vol. 93, PP. 155-178. Aristotelian Society, Wiley.
- Houkes, W., & Vermaas, P. E. (2004). Actions versus functions: A plea for an alternative metaphysics of artifacts. *The Monist*, 87(1), 52-71.
- Houkes, W., & Vermaas, P. E. (2009). Produced to use: combining two key intuitions on the nature of artefacts. *Techné: Research in Philosophy and Technology*, 13(2), 123-136.
- Houkes, W., & Vermaas, P. E. (2010). *Technical functions: On the use and design of artifacts* (Vol. 1). Springer Science & Business Media.
- Houkes, W., & Vermaas, P. E. (2013). Pluralism on artefact categories: A philosophical defence. *Review of Philosophy and Psychology*, 4(3), 543-557.
- Houkes, W., Kroes, P., Meijers, A., & Vermaas, P. E. (2011). Dual-Nature and collectivist frameworks for technical artifacts: a constructive comparison. *Studies in History and Philosophy of Science, Part A*, 42(1), 198-205.
- Houkes, W., Vermaas, P. E., Dorst, K., & de Vries, M. J. (2002). Design and use as plans: an action-theoretical account. *Design Studies*, 23(3), 303-320.
- Juvshik, T. (2021a). Artifacts and mind-dependence. *Synthese*, 199(3), 9313-9336.
- Juvshik, T. (2021b). Function essentialism about artifacts. *Philosophical Studies*, Vol. 178, PP. 2943–2964.
- Katayama, E. G. (1999). *Aristotle on artifacts: A metaphysical puzzle*. SUNY Press.
- Koertge, Noretta. (1979). The methodological status of Popper's rationality principle, in *Theory and Decision* 10(1), 83-95.
- Koslicki, K. (2018). *Form, Matter, Substance*. OUP.

-
- Kroes, P. (2002). Design methodology and the nature of technical artifacts, *Design Studies*, Vol. 23, PP. 287-302.
- Kroes, P. (2006). Coherence of structural and functional descriptions of technical artefacts. *Studies in History and Philosophy of Science, Part A*, 37(1), 137-151.
- Kroes, P. (2009). Technical artifacts, engineering practice, and emergence. In Kroes, U. & Kroes, P. (eds), *Functions in Biological and Artificial Worlds; Comparative Philosophical Perspectives*, MA, MIT Press.
- Kroes, P. (2010). Engineering and the dual nature of technical artifacts. *Cambridge Journal of Economics*, PP. 51-62.
- Kroes, P., & Meijers, A. (2006). The dual nature of technical artefacts. *Studies in History and Philosophy of Science*, 37(1), 1-4.
- Levinson, J. (2007). Artworks as artifacts. *Creations of the mind: Theories of artifacts and their representation*, PP. 74-82.
- Lowe, E. J. (2014). How real are artifacts and artifact kinds?, in *Artifact Kinds*, Springer.
- Maxwell, N. (1993). Part two: Aim-oriented empiricism and scientific essentialism, *The British journal for the philosophy of science*, 44(1), 81-101.
- McLaughlin, P. (2001). What functions explain. Functional explanation and self-reproducing systems. Cambridge University Press.
- Meijers, A. W. M. (2001). The relational ontology of technical artifacts. In Kroes, P. A. & Amsterdam, M. A. W. M. (eds), *The Empirical Turn in the Philosophy of Technology Research in Philosophy and Technology*, Vol. 20, (series editor Carl Mitcham), JAI/Elsevier.
- Miller, D. (2006). *Out of Error: Further essays on critical rationalism*. Routledge.
- Neander, K. (1999). The teleological notion of function. in Buller, D. J. (Ed.). *Function, Selection and Design*, SUNY Press, PP. 123-142.
- Olivero, I. (2019). Function is not enough: An externalist defeat for artifactual and social kind terms, *grazer philosophische studien*, 96(1), 105-129.
- Paya, A., & Mansouri, A. (2018). Science and technology: differences, interactions, and their consequences. *Persian Journal for Philosophy of Science*, 8(2), 134-105.
- Perlman, M. (2004). The modern philosophical resurrection of teleology. *The Monist*, 87(1), 3-51.
- Popper, K. R. (1983a). Metaphysics and criticizability. In D Miller (ed.), *A Pocket Popper: Popper Selections*, Fontana Press.
- Popper, K. R. (1983b). The rationality principle. In D Miller (ed.), *A Pocket Popper: Popper Selections*, Fontana Press.
- Popper, Karl R. (1950) *The Open Society and Its Enemies*. Princeton University Press. Popper, K. R. (1944/1957). *The Poverty of Historicism II*, *Economica* ns XI, 43, PP. 119-137. Reprinted as Part III of K. R. Popper (1957). *The Poverty of Historicism*. Routledge & Kegan Paul.
- Popper, K. R. (1973). Indeterminism is not Enough. *Encounter*, Vol. 40, No. 4, PP. 20-26.
- Popper, Karl R. (1976). The logic of the social sciences, in Theodor Adorno, editor. *The Positivist Dispute in German Sociology*, G. Adey & D. Frisby (translators). Harper and Row.
- Popper, K. R. (1978). Three Worlds, Delivered at the University of Michigan, April 7, 1978. *The Tanner Lectures on Human Values*. Ann Arbor, The University of Michigan.
- Popper, K. R. (1979). *Objective Knowledge: An Evolutionary Approach* (Revised edition ed.). Oxford University Press.
- Popper, K. R. (2002). *Conjectures and Refutations: The growth of scientific knowledge*. Routledge.
- Popper, K. R. (2005). *The logic of scientific discovery*. Routledge.
- Popper, K. R., & Eccles, J. C. (1985). *The self and its brain*. Springer International.
- Preston, B. (2009). Philosophical theories of artifact function. In *Philosophy of technology and engineering sciences* (PP. 213-233). North-Holland.

-
- Preston, B. (2018). Artifact, *The Stanford Encyclopedia of Philosophy* (Winter 2022 Edition), E. N. Zalta & U. Nodelman (eds.), forthcoming URL = <https://plato.stanford.edu/archives/win2022/entries/artifact/>
- Schwartz, S. P. (1978). Putnam on artifacts. *The Philosophical Review*, 87(4), 566-574.
- Searle, J. (1995). *The Construction of Social Reality*, Penguin Books.
- Shearmur, J. (2010). Why the 'Hopeless War'? Approaching Intelligent Design. *Sophia*, 49(4), 475-488.
- Thomasson, A. L. (2003). Realism and human kinds. *Philosophy and Phenomenological Research*, 67(3), 580-609.
- Thomasson, A. L. (2007). Artifacts and human concepts. In Laurence, S. and Margolis, E. (eds), *Creations of the Mind: Essays on Artifacts and Their Representations*, Oxford University Press.
- Thomasson, A. L. (2009). Artifacts in metaphysics. In *Philosophy of technology and Engineering Sciences* (PP. 191-212). North-Holland.
- Van Inwagen, P. (1990). *Material Beings*. Cornell University Press.
- Vermaas, P., Kroes, P., Van de Poel, I., Franssen, M. & Houkes, W. (2011). A philosophy of technology: from technical artifacts to sociotechnical systems. *Synthesis Lectures on Engineers, Technology, and Society*, 6(1), 1-134.
- Wiggins, D. (2001). *Sameness and substance renewed*. Cambridge University Press.
- Winner, L. (2010). *The whale and the reactor: A search for limits in an age of high technology*. University of Chicago Press.
- Zimmerman, D. W. (2002). The constitution of persons by bodies: A critique of Lynne Rudder Baker's theory of material constitution, *Philosophical Topics*, 30(1), 295-338.

Popper's Sociology of Science and Its Political Deficit

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ABSTRACT

The paper offers a distinctive reading of Popper's work, suggesting that his *Logic of Scientific Discovery (LScD)* might be re-interpreted in the light of his *Open Society*. Indeed, Popper can be interpreted as criticising certain aspects of his first book, and as a result improving upon them, in his second. It suggests translating what Popper says about 'conventions' into his later vocabulary of 'social institutions'. Looking back, I believe that Popper never intended the language of conventions and decisions to be read individualistically. I remain unsure whether Popper was himself quite as clear about this as he could have been. My reading makes Popper a pioneer in the sociology of science. Scientific institutions are arenas of political power; but Popper did not discuss the structure and inter-relations of the social institutions of science, or offer a politics of science in the context of his methodology. What is missing from the skeletal sociology of *LScD* is the politics. We could put it in Popperian terms this way: scientific institutions are both open and closed. They are closed, firmly, to the inexpert, to the non-members; supposedly they are open to the qualified, provided the prerogatives of seniority and leadership are acknowledged. Despite these shortcomings, Popper's critical and rational approach and his insistence on openness and intellectual honesty are still important today.

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My theme is: revisiting the classics. One reason is to refresh our recollection of points made by the classics. The second is to treat them with respect but at the same time to criticise them. The third is that we can then connect them to our present condition and see if they offer ways for us to think about current problems.

My paper treats Popper's major works as the classics in question.

Popper started out in one of the technical side channels of philosophy, philosophy of science. His influence, however, was eventually to be felt far beyond this technical niche. He is a provocative, even a controversial thinker. He has only a small circle of real followers, but he has had a remarkable degree of influence on the agenda of many of the fields to which he contributed.

I shall focus on two works of Popper, originally published 11 years apart. Popper's first book, *Logik der Forschung*, was published in German in 1934 with the imprint "1935". 11 years later, at the end of 1945, he published, in English, his two-volume work *The Open Society and Its Enemies*.

The usual reading of Popper's first book, known in English by the slightly altered title of *The Logic of Scientific Discovery*, which I shall abbreviate to *LScD*, treats it as a work of pure philosophy of science. Four years after its publication, stimulated by the Anschluss of 1938, this usual reading of it continues, Popper decided to write about why intellectuals supported totalitarian ideas, a project that became *The Open Society and Its Enemies*. In that second work Popper extended the results he had achieved in philosophy of science to history, politics, and society. This reading utilises the earlier *Logic of Scientific Discovery* to cast light on the later *Open Society and Its Enemies*. By and large, this reading accords with Popper's autobiographical account (Popper 1974).

Without denying for a moment that Popper did indeed apply and extend his early ideas when writing about history, politics, and society, I have found it fruitful to reverse the direction of interpretation and to look into his supposedly purely philosophical first published book for traces or early versions of his later political and social thought. The fruitfulness of this reversal is that it allows us to view the relation between the two books as a critical one. Popper can be interpreted as criticising certain aspects of his first book and as a result improving upon them in his second. This in turn encourages us to push the criticism further and seek still more improvement. And all this is in the spirit of the philosophy that permeates both works namely, that we learn from criticism and by the discovery of error.

My backwards reading of the two books discloses, to summarise, that Popper was already a proto-sociologist at the time of *LScD*. He there showed by argument that some of the traditional problems of that field, especially the problem of demarcation, demanded to be solved in social terms, by means of what he called the adoption of conventions. In my view the best translation of the language of conventions into his later vocabulary is "social institutions". I remain unsure whether Popper was himself quite as clear about this as he could have been, especially because he never claimed the priority he is entitled to, namely that of being a pioneer of the sociology of science.

I further claim that this reverse analysis sharpens the criticism of the earlier work that can be made in light of the later. Here I will concentrate on two main points: although Popper sees science as constituted only in and by certain social institutions, he offers no discussion of the structure and interrelation of those institutions. The other point is that although he has the elements of a sociology of science, he does not have a politics of science. In fact, his main paradigm for the rational and critical discussion that goes on in science is the Socratic seminar. This is an interesting choice of model. For one thing the Socratic seminar is apolitical. For another it has only minimum internal structure. And in sketching the Socratic seminar Popper did something he criticised in others: he beautified the seminar and the character of Socrates. In particular we get no sense of how the various schools and parties of thought of Ancient Athens related to the Socratic seminar.

So much for an overview, let me now go back over these points and develop them.

1. The Received View

Logik der Forschung or *LScD*, is a masterpiece of philosophical writing. Its prose is simple, direct, and terse -- indeed, at times quite dense. The book has a clear if somewhat unusual structure, and in its short compass it manages to lay out the main problems of the field to discuss their formulation, the kinds of solutions that will be viable, and the principal arguments that can be employed for and against the major positions. It is an explicitly normative investigation of how best to proceed if we aim to foster the growth of scientific knowledge. It treats science as necessarily a collective activity to which both co-operation and competition contribute. This collective activity governs itself by rules of procedure which are freely proposed and debated. The supreme rule that governs all the subordinate rules is to the effect that the other rules must be designed so that they do not protect any statement in science against falsification. This rule requires that science should always strive to be intellectually honest, and, especially, it should not encourage acting defensively when ideas are challenged.

What then is being referred to when we discuss empirical science? Popper proposes that we take it to consist of the set of theories that can be falsified. Only theories which can clash with experience should be taken as part of science. We learn from experience, Popper says, when statements describing it clash with science and force upon us the choice between the theory, the experience, or the inference connecting them. It is notable that the set of theories that can be falsified includes both those already falsified as well as those not yet falsified.

The scientific impulse, Popper thinks, is the impulse to refine raw ideas, vague speculations, and the like, into clearer and more precise formulations that can be tested against describable sense experience. So, falsifiability is a goal. Achieving that goal may be by no means a piece of cake. Another way to put the principle is that a statement that can clash with a statement describing experience is empirical and a candidate for the inventory of science. (It is not included in the inventory until it has actually been tested.) Another way to put it is that, for Popper, irrefutability is for science a vice rather than a virtue.

2. Defects of the Received View

On first glance, this position might strike one as philosophically unremarkable. But recall that I said that the methodology is normative. The aim is to discover and articulate the best set of rules for governing the activities we call doing science. The best set is the set which best promotes the growth of scientific knowledge. The growth of scientific knowledge is the progression towards ever more general, ever simpler, and ever deeper descriptions of the structure of the world. These rules, then, are themselves subject to discussion and evaluation. That evaluation is not empirical, although it is consequential. Methodological discussion attempts to think through the consequences of different proposed rules and to choose that collection of rules that maximises the possibility of empirical criticism.

When I first read Popper's *LScD* and came across the words conventions and decisions I naively thought that he meant that each person, in choosing to do science rather than something else, opted to follow the rules and made their scientific decisions accordingly. Yet at the back of my mind I had a worry. I had read his great masterpieces in reverse order. *The Open Society and Its Enemies* of 1945 was my introduction to Popper's writings. He mentioned *LScD* in that book, but it was at that time untranslated. Upon reading the translation at proof stage what should have worried me a lot, but in fact worried me very little, was that Popper's language of conventions and decisions could easily be read as I had read it, individualistically. Yet the Popper of *OS&IE* was emphatic that to make conventions and decisions work they have to be embodied in a permanent structure of institutions.

Looking back, I believe that Popper never intended the language of conventions and decisions to be read individualistically. He writes clearly in *LScD* that there must be intersubjective testability, there must be some sort of collective judgement where there is dispute, and he refers to what he later called the friendly-hostile co-operation of scientists with one another. Such co-operation and competition must need sit inside an institutional framework. Science is not a solitary but a collective activity and so its conventions and decisions are institutional, not individual. The society of scientists has individuals as its citizens, perhaps, but the conventions the society adopts and the decisions it takes are properties of the collective structure, not aggregates of the individual choices. The examples Popper gives of scientific institutions are congresses, learned societies, journals, laboratories and so on. These are the structures in which the methodological rules function.

In *LScD* then, Popper envisages science as a self-governing collective of seekers after truth, an institution or set of institutions in the realm we know as civil society. Scientific institutions are of course remarkable in a number of ways that set them apart from other social institutions. Popper does not spell this out, so I shall do so. Their ideals are egalitarian. This goes all the way back to Sir Francis Bacon who held that all that was required to do science was the native intellect with which we are all more or less equally endowed plus the appropriate organisation. Scientific institutions are officially blind to differences of language and nation, since ideas leap over those

boundaries. Scientific institutions are officially dedicated to the traditional philosophical aim of following the argument wherever it leads. But this is not a goal that respects age, rank, sex, ethnicity or any of the other divisions of humanity, nor does it defer to traditions, authorities, and scriptures as humans so often do.

What is missing from this skeletal sociology of *LScD* is the politics. We could put it in Popperian terms this way: scientific institutions are both open and closed. They are closed, firmly, to the inexpert, to the non-members; supposedly they are open to the qualified, provided the prerogatives of seniority and leadership are acknowledged. Free inquiry into anything and everything is highly likely to produce a clash between science and society. Furthermore, all scientists are citizens of one polity or another and this means both that they may have divided loyalties between science and society, and that they may experience pressure to hail the science of their fellow citizens rather than that of outlanders. And finally, most glaring of all, we cannot overlook the internal politics of this transnational society of scientists. A near contemporary of Popper's, the physical chemist and philosopher Michael Polanyi, described scientific institutions as anything but internally egalitarian; rather they were gerontocratic. So far from being egalitarian they were hierarchical. The clash, however, is only apparent. Polanyi is reporting how scientific institutions actually are; Popper, by contrast, is interested in how scientific institutions ought to be. The clash re-emerges, though, because Polanyi argues that since science is accumulated expertise, and since expertise has legitimate authority, and since there is no outside standard by which to judge, scientific institutions cannot be other than hierarchical, gerontocratic, and authoritarian. But this is becoming a digression and I must return to my main point about politics.

Neither Popper nor Polanyi gives enough attention to the existence of schools of thought and parties in scientific institutions. I do not mean only parties or factions in the learned societies; I mean also parties and factions in intellectual endeavours. There are parties that defend one theory or approach against rivals, parties that cluster around leaders, or institutions. There are parties that go on trying to sustain an idea even though others think it a lost cause. Even we, the general intellectual public, are aware of such divisions. There was good press coverage in the mid-twentieth century as the originators of steady state cosmology tried for quite a few years to sustain their theory against the ascendant Big Bang alternative. The various parties within evolutionary biology are often written up in generalist publications. In his clash with Niels Bohr, Albert Einstein had only a small party of followers who echoed his doubts and questions, yet his dissent is perhaps better known amongst the less expert than among the more expert.

There are, then, intellectual politics, institutional politics, and leadership politics in science. There are also the politics of power and money that increase in importance in those areas of scientific research that require large infusions of the latter. These political matters are played out concretely in how students are taught, in how learned journals select, in who runs for office in learned societies, in how some research finds favour and other research does not. It would be a naive sociology that regarded all this politicisation as somehow inappropriate. Such politics is a function of the fact that groups identify their interests as different from those of other groups and

that all individuals are at one and the same time members of diverse groups. Politics arises as the institutional way of mediating such disputes. It functions as a means of thrashing them out and trying to devise compromise. It is when political considerations take precedence over intellectual ones on intellectual questions that one has a problem. It seems to me that the politics of scientific institutions as well as their structure should be part of the discussion of method.

3. The Open Society

Some of the lines of thought I have been pursuing draw on ways of thinking about history, politics, and society that I learned from reading Popper's *The Open Society and Its Enemies*. This work, which has been in print since 1945, has gone through several editions. The Open Society is Popper's term of art for the kind of society that the thinkers of the Enlightenment yearned for. The enemies of the Open Society are totalitarians of the right and of the left. The growth of human freedom brings change and uncertainty; its opponents hope that more control and less freedom will bring stability and predictability. Popper thought that both left and right totalitarians were uncomfortable with change and uncertainty and sought their opposites either in a return to the past or in an attempt to accelerate our progress to a stable future state. The anti-fascist war which was raging as Popper wrote is scarcely mentioned in the book. But he was quite explicit in naming Communism as the next enemy of the open society and in drawing sharp parallels between it and fascism, indeed viewing fascism as an offspring of Communism.

The argument of the book took the form of an inquiry into the intellectual ancestry of totalitarian social and political thought, with special reference to understanding how some of history's greatest thinkers had endorsed the closed society. Additionally, Popper discussed why so many people of good will uncritically overlooked these intellectual feet of clay. Famously, the butts of the book were Plato, who Popper both extravagantly admired and harshly criticised; and Marx, with whose aims and outlook Popper sympathised, whilst unflinchingly pointing to his scientific errors. There was also a tirade against Hegel and his influence that brought Popper much obloquy, even though most of its content was taken directly from Schopenhauer and Kierkegaard.

As his contribution to the social sciences Popper argued that social problems required the growth of social knowledge, and that in turn required a falsificationist or critical attitude to the theories and proposals that reformers and revolutionaries put forward. He found intellectuals all too intoxicated with theory and unwilling to distinguish science from prophecy. He showed that we learn about society by tinkering with it, but that if we tinker too extensively all at once we will be unable in the outcome to distinguish cause from effect. So, if the outcome is successful, we may mislead ourselves about how this was achieved; if the outcome is unsuccessful, we will not be able to identify where we went wrong.

He also vigorously and controversially attacked the usual treatment of the problem of sovereignty. Thus, he opposed the political idea that the good or the best should rule. In general, he thought the less legitimacy the better. He seemed to think that rulers varied along a scale not of good to bad, but of bad to worse. The best government was the least bad. He tried to shift the focus

of attention to the problem of tyranny which he formulated as: how can we get rid of unwanted rulers without violence? Democracy was no more than one set of solutions to that problem. The freedom to rid ourselves of unwanted rulers without violence was the basic test of the open society. Other tests were freedom of speech and thought and, crucially, freedom to emigrate.

What of science? Completed 9 years after the publication of *LScD*, *OS&IE* contained some new points about science.¹ First of all Popper generalised his negative philosophy of falsificationism into that of being critical, in recognition of the fact that in many cases we can criticise even though we cannot refute. We learn by trying to make ideas criticisable and then engaging in critical discussion of them. Empirical falsificationism thus becomes the limit case of criticism. Some of the inspiration for this generalisation of his negative philosophy comes from Popper's reading of the case of Socrates, put to death for insisting on exercising his critical faculty in a religious quest to find the truth. Socrates deflated the pretensions of experts with arguments, and offered arguments against his accusers. He is one of the heroes of Popper's book. Popper draws a parallel between the Socratic seminar, where all-comers are equal and the only power is that of rational argument, and scientific inquiry. As with *LScD* itself, the aim is normative. Science is the rational practice of the Socratic seminar with empirical criticism given pride of place. Not all criticism in science is empirical refutation, but the most decisive is. This view of science is extended to social and political matters where, similarly, rational criticism is what we should aim for, and when we can make rational criticisms that are empirical refutations, we have the social sciences. Indeed, democratic society itself is viewed as the Socratic seminar writ large, the pooling of the critical talents of the citizens to reach consensus around the solution to urgent social problems. Each piece of legislation, each institutional innovation, is a social experiment. We learn from our failures.

In the course of elucidating what he calls the public character of science Popper considers the question of whether it can be a solitary activity, whether the individual mind can do science. In an interesting passage he concludes that it cannot. He offers the thought experiment of Robinson Crusoe, the well-educated scientific inquirer who becomes a castaway. Common sense would suggest that with his training and his instruments Crusoe could go on accumulating observations and making conjectures to explain what he recorded. But Popper allows that this could be worthwhile only for a short time. Not having the external check of having to articulate his ideas for others and to cope with their criticism, Crusoe's work would soon be no better than soothsaying or, as Popper calls it, "revealed science".

Science, like the Socratic seminar, embodies the attitude of reasonableness, but this attitude is a social rather than an individual achievement.

Reason, like language, can be said to be a product of social life. A Robinson Crusoe (marooned in early childhood) might be clever enough to master many situations; but he would invent neither language nor the art of argumentation... .

¹. It was completed in 1943. It took more than two years to arrange publication.

Thus we can say that we owe our reason, like our language, to intercourse with other men (*OS&IE*, II: 213/225/250).

This is a powerful and interesting position: science is necessarily a collective activity; something that isolated individuals cannot accomplish. It is an activity which makes use of each contribution and hence belongs to everyone. Science is a microcosm of the rationally organised society. The problems of society include some that are scientific and others that are not. Free discussion and criticism is the best approach to either for obvious reasons that were articulated by John Stuart Mill.

The scientific questions are mostly technological: how to arrange society so that specified goals are achieved. Technology needs to be obedient to good science, and that comes when the goal of the latter is the pursuit of truth. Other social questions will involve choices that are not technological or scientific. But if society is already organised to give voice to different points of view and their criticism these other goals will be most rationally chosen if the equality and dissent of all citizens is deferred to. Very clearly, like science, society has in Popper's view to be secular. A qualified science, like creationist science, or Islamic science, or Jewish science, where the antecedent term denotes religious partiality, is a contradiction in terms. The same goes for the open society. A society cannot be at the same time open and subordinate to an ideology, whether that is a social, political, or religious ideology. That subordination sets a limit to criticism and to learning and hence is a closure. The secular framework is not itself such an ideology, for example an anti-religious ideology, but a means of gaining the social co-operation of all members by forcing them to set limits to their ambitions to exert hegemony over those who do not agree with them on social, political, or religious matters. Like many thinkers, Popper considers it a measure of a society how well it institutionalises the protection of minorities.

4. Further Critical Reflections

I have already articulated one criticism of Popper's social view, namely failing to find a place for politics, even to acknowledge that politics pervades intellectual life, including scientific life. The problem is that political compromises, even when achieved by reasonableness, take account of other than intellectual considerations. To this I would respond that scientific institutions are mixed, as are almost all institutions, so such other influences are inescapable. The question is how to limit their possibly corrupting effect.

Another criticism I would make of Popper is that he minimises what a thoroughgoing modernist he is. Most traditional societies embrace partiality: the partiality of tribe, of ethnicity, of religion, and so on. Only in the modern era has the morality and legitimacy of these arrangements been called into question. Qualifications on citizenship have been challenged. Demands for equality have become thoroughgoing.

Popper writes as though it is plain for all to see that tribalism is regressive and that openness is virtuous. He attacked the totalitarians of the right and the left as new tribalists, on the one hand, and killer utopians on the other. One anti-modern, the other ultra-modern. He wrote as though the

social agenda of the Roman Catholic Church, or of the hope of Sharia, or of new orthodox communities, were issues of the past. Perhaps to a European progressive in the period 1938-1943 that seemed to be the case. I think that were Popper active today he would be horrified by the attacks on Enlightenment that come from some of his fellow-intellectuals. This would be, for him, a new treason of the intellectuals. My sympathies are all with Popper here, but sympathy is neither explanation nor means of coming to terms with the facts. Clearly modernity has disappointed the expectations of many, by no means only intellectuals. Whether it can be saved from the latest onslaughts and by what means are questions for those who are still concerned with the agenda of *The Open Society and Its Enemies*.

A further criticism is that his sociology of the Socratic seminar is defective, and its generalisation to science in the first place and society in general in the second, is unworkable. When I say his sociology is defective, I am not referring to its descriptive defects. He is, after all, conjuring an ideal type. What I am referring to is deficiencies in the ideal type. The Socratic seminar is a spontaneous and virtually unstructured order, a congeries of co-operating individuals. The only structures I can discern in it are that Socrates is usually the one who invites participation and usually dominates the discussion, and that there are temporal limits to each session. Science as collective activity cannot be modelled on such a structure for the simple and obvious reason that science contains no single dominant figure, that it is highly specialised and consists of many seminars running simultaneously, and each simultaneous session contains parties and schools of thought, such as always emerge in real debate. Popper makes no place for party politics in science, and hence gives no account of their positive part in its functioning. In the spirit of his work one might argue that parties and schools of thought are the institutional versions of scientific ideas. Cooperative critical discussion of ideas is fostered by these institutions, thus making them part and parcel of the collective functioning of scientific discussion. No institutions are perfect, as Popper notes, so these party formations bring problems as well as advantages. Yet there is little serious discussion of these matters. Isolated figures who try to raise them, like Joseph Agassi and Steve Fuller, are greeted with hostility and denial.

As a collective activity, as a congeries of institutions, science is bound to have internal structures and external relations with other social structures. All of these are problematic. It can perhaps be argued that the openness of science's internal structures is an internal concern. I would counter that since there is an interface with the wider society outside interests cannot be excluded. A great deal of public money goes to science, and wherever public money goes there is a presumption, in an open society, of public accountability. Fraud in science captures the interest of the public, which also suggests that support of science is a form of public trust. A great deal of science is housed in public universities and these are subject to public scrutiny. Above all, science commands status and authority in society and makes great claims for the social benefits it brings. This cannot but attract general forms of supervision. To think of this as outside interference is not only defensive, it is to imagine that science can benefit by decreasing certain critical inputs. Polanyi says so plainly.

In these days of the COVID-19 pandemic, politicians are urged to “follow the science”; when the science changes, politicians and public are bewildered and wonder how science can be trusted.

Popper thinks public control is the same as control by the circle of specialists. His ambivalent attitude comes out in the following passage where he is discussing the public testability of scientific claims:

This aspect of scientific method shows what can be achieved by institutions designed to make public control possible, ... even if this is limited to a circle of specialists. Only political power, when it is used to suppress free criticism, or when it fails to protect it, can impair the functioning of these institutions, on which all progress, scientific, technological, and political, ultimately depends (*OS&IE*, II: 206/218/242).

The message seems to be that political power should stay back and let science pursue its mission. As I hope I have shown, there is a lot more to it than that. Scientific institutions are themselves arenas of political power, and they connect to political institutions in the wider society. Means have to be found to combine this fact with public supervision and genuine openness to free critical inquiry. Our societies have legislated the forms of governance for the professions of medicine, law, and accounting; I wonder if one day they will want to do that for science, both natural and social. If they do, we can expect resistance from within science because such initiatives will be clearly seen as restricting its autonomy in return for its monopoly of expertise. Above all, such professionalisation would impose responsibility and accountability to a degree presently quite unknown in science.

Such a move would perhaps regularise or perhaps merely reduce the incoherence of science as institution. It is difficult for politicians, in public health or elsewhere, to follow the science when science is an arena of intense and endless debate. Science is institutional scepticism and so for any alleged general consensus it is not difficult to find competent dissenters. This is a price that we cannot avoid paying. It is the same price we pay for being in open societies. They are messy, inefficient, and far from the best we can imagine. Yet all the alternatives are much worse.

To conclude, it seems to me that the politics within science have become central issues and that rereading the arguments Popper published at the end of World War II is a fruitful place to begin thinking about them. He was writing before the atomic bomb. He wrote at the very beginning of what we now call Big Science. He wrote long before our crowded earth tried to devise global strategies against pandemics. But his articulation of a critical and rational approach, and his insistence on openness and intellectual honesty are values for today as much as for yesterday.

References

- Popper, Karl R. (1935). *Logik der Forschung*, Julius Springer. Translated to English by the author in [1959] as *The Logic of Scientific Discovery*, Hutchinson.
- Popper, Karl R. (1945). *The Open Society And Its Enemies*, George Routledge & Sons, Ltd, 5th edition, Routledge & Kegan Paul, [1966], Classics edition [2003]. Routledge.
- Popper, Karl R. (1974). Autobiography of Karl Popper in P. A. Schilpp, ed., *The Philosophy of Karl Popper*, Open Court. (Revised and republished as: *Unended Quest. An Intellectual Autobiography*, [1976] Open Court)

Popper's Open Society and Its Problems*

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ABSTRACT

After offering an overview of some of the main themes of Popper's political thought, the paper argues that his account faces two problems relating to institutions. The first is that while Popper stresses the 'rational unity of mankind', and the potential for any of us to furnish criticisms of public policy, it is not clear what institutional means currently exist for this to enable this to take place. Second, Popper has stressed the conjectural character of even our best theories. However, at any point, some theories will have fared better in the face of criticism than others, and they may give us important information about constraints on our actions. At the same time, as ordinary citizens we may not be in a good position to understand the theories in question, let alone appraise the state of the specialised discussion of them. There is, it is suggested, a case for thinking of ways to institutionally entrench such fallible theories, especially in the current setting in which social media play an important role.

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1. Introduction

In this paper, I discuss Popper's *Open Society*, but also some of the problems that I think that his political ideas face. I should say, at the outset, that I think that *The Open Society* is a very important book. However, I think that it suffers from not being sufficiently concerned with institutional issues, in a sense which I will explain.¹ I will start by presenting briefly what I take the key features of Popper's approach to politics to be.

2. Some Features of The Open Society

Popper's work was written as a defence of a humanitarian and individualistic approach to politics, against various ideas which were influential at the time at which he was writing. His political thought – which I have discussed in some detail elsewhere – was also influenced in important ways by his ideas in the theory of knowledge.² He was – I think, devastatingly – critical of teleological ideas about history, and also of uncritical progressivism, while at the same time arguing that we have a moral duty to be optimistic and to do what we can to make the world a better place. He argued that decisions about politics (and thus about the future course of history) are in our hands. He emphasised, at the same time, the fallibility of our knowledge, and that human actions have unintended consequences. As a result, what matters is that there are effective forms of critical feedback to inform those responsible for decision-taking where things have gone wrong.

Popper also argued that what is of key importance is not who should rule, but 'How can we so organize political institutions that bad or incompetent rulers can be prevented from doing too much damage?'.³ He stressed the importance of the critical appraisal of governmental policy by all citizens. He was highly critical of the idea that an elite were entitled to rule, by virtue of their possession of knowledge. He emphasised, in this context, a re-interpretation of the Kantian theme of the 'rational unity of mankind' (see *The Open Society*, chapter 24). Anyone might be in a position to contribute pertinent criticism of our existing society, or of policy proposals. At the same time, it is important to note that the role that he accorded to us was, typically, as potential critics of policy rather than as people who could expect to formulate it. At the very beginning of his *Open Society*, Popper quoted Pericles: 'Although only a few may originate a policy, we are all able to judge it'. Popper strongly favoured democracy. But he championed it as a way of changing governments without violence. This contrasts with the way in which 'democratic' is, today, widely looked at as if it was something that is good in itself, rather than its being viewed, as Popper does, in instrumental terms. The contrast is surely in Popper's favour.

¹ Since writing initial versions of this paper, Piers Turner has mentioned to me that he has an unpublished paper, 'Expert Rule and Open Society', which explores issues similar to those which concern me here, by way of a discussion of Popper and John Stuart Mill.

² See Jeremy Shearmur, *The Political Thought of Karl Popper*, London: Routledge, 1996, and 'The Logic of Scientific Discovery', in J. Shand (ed.), *Central Works of Philosophy: Volume 4: The Twentieth Century: Moore to Popper*, Chesham, Bucks: Acumen, January 2006: 262-86.

³ Popper *Open Society*, chapter 7, section 1.

The reservations to which I referred previously about Popper and institutions are, first, because it is not clear what mechanisms there are – or can be – to give effective but pertinent feedback from ordinary citizens of the kind called for by Popper’s approach. By this I mean – and I will discuss this further, below – the development of criticisms of theories and of policy proposals, rather than just the expression of people’s feelings about them. This I would take to be a pressing problem that needs to be addressed today by those of us who admire Popper’s *Open Society*. The institutions of Western democracies which often see themselves as ‘open societies’ do not, as they currently exist, seem able to play this role effectively.

In addition, as Cass Sunstein has argued,¹ the way in which social media have developed seems in fact to make the kind of interchange between, and learning from, one another that Popper favoured – notably when we have different backgrounds and hold differing views and values – more difficult than it was in the past. We face two particular difficulties here.

On the one hand, Popper has stressed the degree to which we interpret the world in the light of our preconceptions. These, on Popper’s account, operate right down to the level of our sense organs and the structure of our understanding of the world. Objectivity,² for Popper, can be a product of our interaction with people who have different views and presuppositions from ourselves, provided that we approach them with a proper appreciation of our own fallibility, and with the idea that we might have something to learn from them. Objectivity, for Popper, is emphatically not the product of someone who tries to be objective, or who thinks that they have removed their prejudices.³ That is not something that people can achieve on their own. (In this respect, Popper’s approach is the antithesis of Descartes’: rather than isolating oneself and trying to work out what one can be most sure of, for Popper one needs to go out among other people, to interact with them, and receive critical feedback from them.) Indeed, from a Popperian perspective, there is always the possibility that there might be some problem with even our most familiar and best-tested assumptions and procedures.

What is needed, here, is a willingness on our part to accept criticism, something which, as Sunstein has argued – referring to a lot of empirical evidence – does not come easily to us. We also need to give serious thought to what would constitute an improvement to our existing theories and institutions. As I will argue later, a particular problem here is that we may be in a situation in which, to accomplish important social purposes which we value, we have to make use of institutions which preclude our also being able to achieve some other things which we may also value very much. Further, what these constraints are may be a matter of (fallible) expert knowledge which it may be difficult for us to understand and appraise.

¹ See, notably, Cass Sunstein, *#Republic*, Princeton and Oxford: Princeton University Press, 2017

² Or at least progress towards it.

³ See, on this, Popper’s discussion in *Open Society*, chapter 23.

On the other hand, we face, today, a problem that seems to represent the other side of a feature of modern Western societies that Popper welcomed: that they have become what he described as 'fatherless' societies.¹ He wrote:

For the society of our free world since the Reformation has indeed seen a decline of authority without parallel in any other epoch. It is a society without authority, or, as one might call it, a fatherless society.

And further, describing the 'Atlantic Community', he wrote of it as

... a fatherless society ruled by the interplay of our own individual consciences.

Popper had, earlier in the same lecture from which these quotations are taken, written of the contrast between such an approach, and that of authoritarians – even though they he thought that they were correct in their criticism of the over-optimistic epistemological ideas of liberals. Popper thought that we could reject the ideas of pessimistic authoritarians because of our respect for truth, our toleration of those who have beliefs that differ from our own, and because we have learned that 'by listening to one another and by criticizing one another, we may get nearer to the truth'. My concern is that, today, we have moved away from these very things, in terms of both intellectual ideas and institutions.

Intellectually, there has been the destructive impact of postmodernism and poststructuralism. This, strangely, often shares points which were made in Popper's work; notably the criticism of teleological views of history, and of positivistic empiricism. But while, in Popper, this was coupled with fallibilism and an aspiration for truth (and to achieve realistic theories about the world), the recent influence of these ideas has been in a very different direction. There is, typically, a repudiation of the ideal of truth² and of realism. And at the same time, the assumption that the cogency of the kind of view which represents one's own perspective or identity cannot legitimately be questioned. The full horror of the consequences of all this seems to be displayed in Steve Fuller's *Post Truth: Knowledge as a Power Game*, and his *A Player's Guide to the Post-Truth Condition*.³ The search for knowledge, on his account, is replaced by people simply trying to gain influence and exercise power.⁴

¹ See, on this, Popper's 'The History of Our Time: An Optimist's View', in *Conjectures and Refutations*, London: Routledge, 1963. This lecture (from which the references in my text are taken) dates from 1956; there is more material on this idea in his (unpublished) Emory lectures of the same year. Popper had indicated that he introduced the idea in his William James lectures of 1950 (but all we have from this are some fragmentary notes) and in the first American edition of *The Open Society*, but I have not been able to locate a discussion of this material there.

² Even though it is not clear how the claims of these theorists could be taken as they clearly wish them to be taken, unless one understood them as aspiring to truth in the very sense that they seem to be calling into question.

³ London: Anthem Press, 2018 and 2020, respectively. I have discussed this aspect of Fuller's work in my 'Steve Fuller and Critical Rationalism', delivered at the 5th International Zoom Conference on Karl Popper and Critical Rationalism, March, 2023.

⁴ It is striking that in his work – as in that of Feyerabend before him – there seems to be no real appreciation that invoking power and contending political ideals outside of a context of their critical appraisal, leads us back to key problems of political philosophy concerning how people with such diverse concerns are supposed to interact.

In terms of institutions, the very ideas to which Popper appealed seem to have been dramatically undermined by recent social developments. Social media has here played an important role; but there is much more involved, not least the kinds of issues relating to the physical and cultural separation that has taken place in the United States as explored in Bill Bishop's *The Big Sort*.¹

A key issue, however, is this. It is important to argue, as did Popper, and before him Mill in *On Liberty*, for fallibility and for the importance for us all of public discussion. But it is crucial also to pose the sociological problem of where, and under what conditions, this is to take place. Here, Jürgen Habermas's *The Structural Transformation of the Public Sphere*² is particularly interesting – if read through Popperian spectacles. For one of the arguments of Habermas's book is that greater 'democratization' of 'the public sphere' in fact led to the destruction of something that (however inadequately) served to exemplify the concerns of Kant, Mill and Popper for the existence of a forum within which ideas could be scrutinized on their merits. This is not to say that greater openness of the public sphere, so that it better exemplifies 'the rational unity of mankind', is not desirable. But a key issue is that it plays the epistemological role that we need it to, and this is not something that we can simply expect to occur spontaneously.³ Rather, it calls for an ongoing project of deliberate critical construction. We need critical scrutiny of how, currently, institutions operate so as to discharge the kind of critical function that Popper was looking for, and then both theoretical discussion and piecemeal social engineering to try to improve things.

Second, Popper's account in *The Open Society* quite properly stresses the fallibility of the views of experts and the importance of their ideas being open to criticism. But Popper does not discuss what I would argue to be an important complement to this.⁴ It is the idea that each of us has typically to rely on tentative knowledge produced by fallible experts. This knowledge may suggest that there are significant constraints on what it is possible for us to achieve which are not obvious at the level of common-sense. It may suggest that things which we dislike, which may be an affront to our values, or to our ideas about what is just, or about the rights that people should be able to enjoy, cannot in fact be remedied in the presence of other things which it is unclear if there are ways of changing.⁵ (See, my discussion in section six, below.) Clearly, as any such claims are fallible, we might be provoked by such discoveries into contesting the ideas which constitute current fallible expert opinion, which is fine. But it is important to bear in mind that doing this involves one in offering criticism, and further suggesting how our existing fallible knowledge can be corrected and improved on, not simply saying that one does not like something. We may wish to come up with

¹ Bill Bishop, *The Big Sort*, Boston: Houghton Mifflin, 2008.

² Jürgen Habermas, *The Structural Transformation of the Public Sphere* [1962], Cambridge, MA: MIT Press, 1989.

³ It is worth noting, here, the way in which in his 'Back to the Presocratics' (see *Conjectures and Refutations*), Popper argued for the importance of a distinctive tradition of preserving the ideas of key historical thinkers, while at the same time criticizing them. A problem, however, is how this is to be accomplished institutionally.

⁴ Indeed, there is a sense in which Popper, personally, was one of the last exemplars of the approach – not uncommon among those of his generation who grew up in the Austro-Hungarian empire – that it was possible for a diligent, intelligent and hard-working person to engage with almost any intellectual problem. This does not seem something to which we can sensibly aspire, today.

⁵ Or which no-one sensible would wish to change, once they understood what these interconnections are.

an alternative to our current ideas which will constitute an improvement upon them. However, there is no reason to suppose that one will actually be able to do this. This is something to which one might still aspire even when one currently does not know how it can be accomplished.¹ But until one has actually come up with cogent criticism of current leading ideas and also with ideas about how they might be improved on, it seems rash to disregard the constraints that they suggest exist on our current actions.

Popper, by contrast with this, tended to stress the importance of 'piecemeal social engineering'.² Piecemeal social engineering is itself of the greatest importance. But it would seem wrong to treat such an approach as giving us a licence to disregard our best current (but of course fallible) knowledge. And as I argued in my *Political Thought of Karl Popper*, this is something that Popper underplays. Further, in approaching these matters in the sphere of public policy, it is important to bear in mind three things.

First, that for Popper there needs to be an initial approach which takes seriously that determining what problems should be addressed is difficult, and that different people will have different ideas about this, influenced by their various different ideals. Popper in his *Open Society*, and in 'Public and Private Values' (see, now, his *After the Open Society*), emphasised the importance of looking at the degree to which there can be agreement across different perspectives, and in particular stressed that people should concentrate on what they thought was unacceptable. It is not enough that some people think that something is bad.

Second, I have suggested that there needs to be a concern for our current (fallible) theoretical understanding of what the limitations are as to what we can achieve. We may, for example, have ideas about people's rights which – while all might agree that it is desirable if people³ could enjoy them – may not be feasible to try to implement in the light of, say, constraints imposed upon us by the demographic and economic structures of the society in which we are living. Clearly, what one is appealing to here are fallible and contestable knowledge claims. But these matters may be complex, and not easily grasped by, let alone easily contestable by, the non-specialist.⁴ There is, I would suggest, a need for a certain (critical) deference to fallible expert judgement, in an Open Society of any sophistication – although I make this point fully conscious of the fact that Popper would not have welcomed it.

¹ See, for a discussion of this issue, my 'Why the "Hopeless War": Approaching Intelligent Design', *Sophia*, 49, Issue 4 (2010), pp. 475ff.

² It is interesting that Peter Munz, in his recollections of conversations with Popper in New Zealand in the 1940s (see *Beyond Wittgenstein's Poker*, Aldershot: Ashgate, 2004) reports Popper as regretting that Hayek, in his *Road to Serfdom*, London: Routledge, 1944, was not more concerned with piecemeal social engineering than with theories which discuss the kinds of constraints to which I am referring here. I would stress, however, that – as I shall explain later – the kinds of constraints with which I am concerned are not limited to what might be called 'Hayekian' ones. For a recent appreciation of incrementalism and both Popper and Lindblom's work on 'muddling through', see Greg Berman and Aubrey Fox, *Gradual: The Case for Incremental Change in a Radical Age*, New York: Oxford University Press, 2023.

³ I will leave to one side the difficult issue of whether these issues can sensibly be addressed just on a national basis.

⁴ I would commend, here, Danny Dorling and Stuart Gietel-Basten, *Why Demography Matters*, Cambridge: Polity, 2017.

Third, it is important that knowledge claims that affect us, as ordinary members of the public, should be clearly explained to us, and that we have the opportunity to ask questions about them – and to get them answered. Similarly, if people have concerns about how policies are working, it is vital that they be assisted to put their concerns in ways that can be responded to, and our institutions submitted to ongoing processes of piecemeal social engineering as a result. All this is something utterly different from the kinds of exchanges which are coming, currently, to dominate the public sphere under the influence of social media. In my view, a deliberate effort needs to be made to reconstruct the institutions of the public sphere, of course on a voluntaristic basis, so that they will better serve the purposes needed if a Popperian Open Society is to operate.

Popper criticized the idea that we could work out what an ideal politics should look like and guide our efforts by that. Not only, say, might some ideal for a just society to which people are attracted at a particular time be flawed. But we may well only discover what is problematic about it, over time. He also criticized the idea that we were justified in requiring that people make sacrifices for the achievement of some such ideal.¹ At the same time, while he was an ethical individualist in the sense of stressing that it was individual well-being and suffering that mattered, he stressed that ethical individualism was not incompatible with altruism (as many at the time at which he wrote seemed to think). His writings also exhibit a long-standing concern for the relief of the suffering of others.²

Popper also stressed the way in which people may be attracted to different – and contrasting – visions of a good society.³ Not only might some people dislike strongly what, for others, would be an ideal. But he also discussed the way in which there were limits to the extent to which people would be likely to be able to convince others that there was something wrong with their ideals. In the face of this, Popper proposed an approach which has sometimes – but I think incorrectly – been referred to as ‘negative utilitarianism’

3. Was Popper not a ‘Negative Utilitarian’?

I think that the answer to this question is: ‘no’.⁴ Popper commends an approach which – across people of a humanitarian character – tries to see what agreement might be reachable, concerning what is socially unacceptable. He in this context refers to involuntary suffering, but also to injustice.⁵ He also argues that we should set out to cooperate with one another, across ideological divides, to see if we can form an agenda for politics which addresses such issues. He advocates

¹ For recent explorations of this aspect of Popper’s work, see my ‘Lessons from Twentieth Century Political Philosophy before Rawls’ in *Routledge International Handbook of Contemporary Social and Political Theory*, second edition, ed. Gerard Delanty and Stephen P. Turner, London: Routledge, 2021, and the reference there to Gerald Gaus, *The Tyranny of the Ideal*, Princeton, NJ: Princeton University Press, 2016.

² This is a striking theme in Popper’s Autobiography, *Unended Quest*.

³ See on this Popper’s ‘Public and Private Values’, in his *After the Open Society*.

⁴ See, however, H. B. Acton and J. W. N. Watkins, ‘Symposium: Negative Utilitarianism’, *Proceedings of the Aristotelian Society*, supplementary volume 37, 1963, pp. 83-114.

⁵ See on this my *The Political Thought of Karl Popper*.

working by way of 'piecemeal social engineering', to try out ways in which these problems might be resolved, controlled by critical feedback if the measures are not working, or if they have unanticipated problematic consequences.¹ 'Piecemeal social engineering' is not for Popper restricted to small-scale changes: the key issue, for him, is whether we can learn if things are going wrong, and make changes to what we have done.²

Two points might, at once, be noted about all this. The first, is that this is to take place in a setting to which Popper refers as 'protectionism'. This amounts to the protection of ideas about the rights of individuals – including protection against economic exploitation.³ It is not clear how Popper thought that the content of this would be established. What I have in mind, here, is that Popper gives us an account as to how a tentative agenda for 'piecemeal social engineering' should be set. On the face of it, his 'protectionism' would in part be an element of this (e.g., insofar as it is setting an agenda to protect people from economic exploitation). But if it is also playing a role of safeguarding people's rights – including in respect of what government might wish to do to them in achieving its goals, in the pursuit of 'piecemeal social engineering' – then on the face of it we stand in need of an account of how the content of such rights is to be determined which is different from the general account that Popper offers as to how the agenda for piecemeal social engineering should be formed.⁴

The second, is that – as Lord Boyle pointed out in his contribution to *The Philosophy of Karl Popper*⁵ – Popper's emphasis on injustice and suffering, and a consensus as to what is unacceptable, might be understood as having consequences which are at odds with what one might take to be the broadly social democratic spirit of his work. For consider programmes like the establishment of free libraries to which anyone can get access. These would seem worthy, and to be something for which there would be broad support. But they are hardly concerned with the relief of suffering or injustice as such. Someone might try – as my friend Professor Ali Paya has done in a private communication – to argue that the failure to provide public libraries should count as 'injustice'. This does not work. For the content of the agenda for 'piecemeal social engineering' is given by an attempt to reach a consensus as to what is problematic. Public libraries, and other

¹ I should stress that what is involved in 'piecemeal social engineering', in Popper's account need not be small-scale: what he emphasises is the possibility of our learning that things are going wrong, and our being able to correct them.

² Something that makes this clear in an interesting manner, is his letter to Rudolf Carnap of January 6th, 1947, in response to Carnap asking him whether he is still a socialist. See Karl Popper, *After the Open Society* ed. J. Shearmur and P. Turner, London, 2008, pp. 103-5.

³ I have put this in terms of rights just for ease of comprehension, although I am increasingly uneasy about the discourse of rights which has become such a feature of recent politics and political thought. To cut a long story short, it seems to me that we need to think, here, in terms of a Hegelian notion of *Sittlichkeit* – in the sense of what concrete practical arrangements we might aim at which would involve people being treated better than they are currently, rather than thinking that it is useful to address this issue in purely abstract terms.

⁴ One suggestion which I have explored in my *Political Thought of Karl Popper*, London: Routledge, 1996, and my *Hayek and After*, London: Routledge, 1996, is that a contribution might be made by the kind of protection that needs to be given to people if they are to be able to contribute to the critical evaluation of theories and policy proposals.

⁵ Lord Boyle on the Dualism of Facts and Decisions in *The Open Society* in P. A. Schilpp (ed.) *The Philosophy of Karl Popper*, and also Popper's response.

measures which would foster individual self-development look worthy. But they are issues which it is not clear would be consensually agreed to. However, the needs involved could be addressed, say, by a mixture of subscriptions and charitable giving by those who favour them, rather than by governmental action.

If what I have argued here is right, there is, as Boyle indicated, the risk that Popper's approach might be unduly narrow in its consequences in terms of what it admits to the agenda for public policy. To Boyle, Popper responded¹ that he was in agreement in terms of legitimate governmental action having a wider scope (in effect, than his earlier suggestions had indicated). And, in a draft of his address for the Sonning Prize which is available in *After the Open Society*, Popper indicated that he favoured government assistance for 'boarding schools of the communal living type'.² All this, though, leaves us with a couple of problems.

The first is: such approaches involve the over-riding of some people's views. Conservatives, say, might be unwilling that public funds should be spent on any such purpose. Indeed, they might say that they care passionately about the welfare of children, and on those very grounds would not want to be involved in the funding of an experimental school of any kind!

Second, are just any such schools to be funded: e.g., what about those set up by religious groups? A risk, in all this, is that if we move away from a 'negative consensus' approach (as in Popper's 'Public and Private Values') to the government funding of 'good' projects, we face the problem of how what is 'good' is to be decided. There is a risk that those whose sensibilities are of the kind that, at the time at which I write, are commonly referred to as 'liberal', are apt to see their ideals as self-evidently correct. But are only some things to count, or are all main groups in society to get their favoured concerns underwritten from general taxation?³

4. A Problem

The issues that I have raised so far, are intended as suggestions as to how an Open Society understood in Popper's terms might be improved. I'd like to turn, now, to a wider problem. It relates to the fact that that what constitutes the material that government works on when undertaking 'social engineering', are activities that, on the face of it, people are choosing to undertake, on the basis of their own tastes, values etc, and are ones which don't infringe on what are taken to be the rights of others.

What I have in mind, here, is that problems can well be consensually recognised, but that they may occur at a macro or emergent level in relation to people's behaviour. What micro-behaviour they are related to, and what it might be most effective for government to try to influence (e.g., by

¹ See his 'Replies to my Critics' in *The Philosophy of Karl Popper*.

² See, on this, 'For a Better World', chapter 32 of *After the Open Society*, p. 297.

³ After the fashion of, say, the Dutch model of 'consociational democracy'. On this, see Arend Lijphart, *Democracy in Plural Societies: A Comparative Exploration*, New Haven, CT: Yale University Press, 1977. A useful overview of some of the critical literature on this is given in the Wikipedia article on 'Consociationalism': <https://en.wikipedia.org/wiki/Consociationalism>

way of regulation, by way of providing incentives or by means of ‘nudging’¹) may not be something that citizens understand, when they indicate that they agree that the issues in question are problematic. We may also well object to government setting out to manipulate us, even to bring about something that in the abstract, as it were, we recognise as good. (Consider, in this context, periodic discussions about whether, if citizens are over-weight, and this has consequences for their health, government can legitimately attempt to control what they eat, or how much exercise they get.) And, further, if the issues are extended to, say, how people relate to minority ethnic groups or people with particular kinds of gender, this may well involve government interfering with things that people take it that they are entitled to do – e.g., because they are related to their religious beliefs, or to social practises to which they are attached. All these raises problems which merit detailed discussion.

A second issue, here, relates to traditions. One might say that Popper's *Open Society* was, itself, in some ways anti-traditionalistic (see notably chapter 24). But Popper modified his views – or at least how he expressed them – in ‘Towards a Rational Theory of Tradition’ (see his *Conjectures and Refutations*). However, the recognition of the significance of traditions (obviously, not all of which are good) poses a problem for a trial-and-error, social engineering approach to politics. For when significant changes are made to how we have done things in the past, if they do not work out well, we may find that traditions are difficult to restore.

Or, to put matters more accurately, the restoration and modification of traditions, or even the invention and implementation of new ones, might require some activities which I am not sure we should wish to see in the hands of the government. Hobsbawm and Ranger's collection *The Invention of Tradition*² offers a most interesting account of the way in which various traditions were, in fact, invented rather than being the products of time immemorial. But the deliberate invention or re-invention of tradition seems something that is best addressed by way of voluntary or commercially based activity, rather than by way of the exercise of the powers of government.³

A further problem is that there may be difficulties about what people want. Let me explain this, as it brings me to what I think is a key problem facing Popper's *Open Society*.

5. Plato's Revenge

One rather odd feature of Popper's *Open Society*, is the kind of criticism that he offers of Plato. In some ways, he obviously admires Plato's philosophical ideas, and he is obviously sympathetic to, and in some ways sees himself in the mould of, Socrates as Plato depicts him. But what is odd, is that when he criticises Plato's *Republic* and his *Laws* in *The Open Society*, Popper offers the kind of criticism that one might expect from someone in the Marxist tradition: i.e., a critique of Plato as a reactionary class ideologist.

¹ See, on this, Richard Thaler and Cass Sunstein, *Nudge: The Final Edition*, London: Allen Lane, 2021, and for some interesting reflections on criticisms of his approach, Cass Sunstein, *The Ethics of Influence*, Cambridge: Cambridge University Press, 2016.

² *The invention of tradition*, ed. Eric Hobsbawm and Terence Ranger, Cambridge: Cambridge University Press, 1983.

³ Although this is something that totalitarian governments have often done, and even democratic ones in wartime.

Popper does stress that our best ideas are fallible, and that criticism might come from anyone. What, I would have thought, goes badly wrong, is that Popper does not confront, and to deal with, a major issue raised by Plato. Namely, that some ideas are better than others, and that these ideas, and their merits, may be difficult for some of us to grasp and evaluate. There is, as I have suggested, a risk that Popper's approach of 'piecemeal social engineering' may be too responsive to issues about which we are concerned when, if we were better informed, we would not press for their resolution. A key issue may be: how do we bring to bear our best (fallible) theoretical knowledge to limit what we ask to be done?

An important point, here, was made by Hayek in his inaugural address at the L.S.E., 'The Trend of Economic Thinking'.¹ In this, Hayek delivered some reflections on Ludwig von Mises' argument about the problems of economic calculation in a socialist society; a line of argument that Hayek was, himself, to take further.² Hayek argued in the following way:³

It was only when, because the economic system did not accomplish all we wanted, we prevented it from doing what it had been accomplishing, in an attempt to make it obey us in an arbitrary way, that we realized that there was anything to be understood. It was only incidentally, as a by-product of the study of such isolated phenomena, that it was gradually realized that many things which had been taken for granted were, in fact, the product of a highly complicated organism which we could only hope to understand by the intense mental effort of systematic inquiry. Indeed, it is probably no exaggeration to say that economics developed mainly as the outcome of the investigation and refutation of successive Utopian proposals.

What, you might ask, does this have to do with Popper? It is relevant because, when, in his *Poverty of Historicism*, Popper reflects on issues that Hayek had raised about the problems of economic calculation in a (market-less) socialist economy, Popper re-phrased the lesson that he thought that we should draw from Hayek's argument, and then wrote:⁴

the [social] engineer must use the technological knowledge embodied in these hypotheses which inform him of the limitations of his own initiative as well as of his own knowledge

This is all well and good. But it poses two kinds of problems that Popper himself does not address. The first, is the character (and also the issue of the social entrenchment) of such fallible but expert knowledge. And, second, there is the problem of how it can be conveyed to ordinary citizens that there are some things which they might find attractive, but which it would be a disaster

¹ Now most easily available in *The Trend of Economic Thinking* ed. W. W. Bartley and S. Kresge, Chicago: University of Chicago Press, 1991.

² See, on all this, *Socialism and War* ed. Bruce Caldwell, in his *Collected Works*, Chicago: University of Chicago Press, 1997.

³ Hayek, 'The Trend of Economic Thinking', p. 19 in *The Trend of Economic Thinking*.

⁴ *The Poverty of Historicism*, London: Routledge, 1957, section 21, p. 64, note 1.

if they were to seek for – e.g., by putting them on the agenda of issues to be addressed by means of ‘piecemeal social engineering’.

Before I turn to these two issues, it is worth noting that Popper himself had some ideas which it could be claimed are of a similar character. Consider, for example, what he had to say about the way in which life in ‘abstract’ societies, in which there was little by way of traditional community and diminishing face-to-face relations between people, might set up psychological tensions which it would be dangerous if we were to try to meet.¹

Why do I suggest that there are such issues? First, (and the relevance of this will become clear) I think that there is a problem about Popper’s criticism of Marx. I think that Popper was completely and utterly right to repudiate ideas of historical teleology which had played a key role in Christian, Hegelian and then Marxist social thought. However, I think that he was wrong to simply discard what he called ‘essentialism’.

This in Popper was something of a portmanteau term. Into it, Popper packed various disparate ideas; e.g.: Ideas about ultimate explanation; Ideas about there being ‘essences’ behind each word, the grasping of which was claimed to be a particular concern of the social sciences; and Ideas about the infallible intuitive grasp of essences. All of these, indeed, seem to be problematic.²

However, also involved in ‘essentialism’ there is an idea which is perfectly correct, and something that Popper should, in fact, have embraced: a realist view of the social sciences, within which human actions give rise to structures which may then, constrain us.³ This last point – for which John Wettersten has also taken issue with Popper⁴ – is of real importance, and to be related to the issues that I have raised above in connection with Hayek’s work. It also relates to Popper’s own points about an ‘abstract’ society. For such views suggest that, as an unintended consequence of our actions, we may bring into being structures which then constrain what we can sensibly do or aspire to achieve, including things which we may find highly problematic.

Just in case it is not clear, may I stop here to spell out the connection of these points with my criticism of Popper’s anti-essentialism? In Popper’s critical engagement with Marx, the realist baby gets thrown out with the historicist bathwater. Amidst the blunderbuss-style condemnation of various features of ‘essentialism’, we lose sight of a key and important idea. It is that in the social world, structures are created as consequences of our actions, which may then serve as systematic constraints on what it makes sense for us to aspire to, so long as those structures remain in place.

¹ I was struck that Ian Jarvie’s reading of this in his most interesting *The Republic of Science*, Amsterdam and Atlanta, GA: Rodopi, 2001 is very different from mine here. I took it that Popper’s point was to say that a dislike of an ‘abstract’ society was simply one of the things that we had to put up with in an Open Society, while Jarvie took it as highlighting an issue that had to be remedied.

² But where we need, it seems to me, to distinguish between the sense in which people act on the basis of particular ideas – such as their understanding of the state, and of their place in it – and the value of those ideas when assessed as explanatory theories. As explanatory theories these ideas may be false, but it may, nonetheless, be vital to understand people as acting on the basis of them in order to understand their actions and the unintended consequences of those actions.

³ As I argued in *The Political Thought of Karl Popper*, the ‘modified essentialism’ which he embraced with regard to the natural sciences should also have been extended to the social sciences.

⁴ See his *The Roots of Critical Rationalism*, Amsterdam: Rodopi, 1992.

Much of Hayek's work has been concerned with just this issue, in relation to the consequences of having, in place, an effectively operating market-based society, and the kind of legal order on which it depends. (These, Hayek argued, we also need to retain because there is no effective alternative to the organization of a large-scale society of the kind in which most of us live, without having well-functioning markets. While compliance with the rule of law – as Hayek understood it, in terms of the Kantian Rechtsstaat tradition – indicated how government could intervene within a market economy without this intervention being problematic to people's liberty, as well as being vital for people's liberty as such.¹)

However, rather than laying myself open to accusations of political bias, let me illustrate my point with reference to what Marx said about 'relations of production'. The idea, here (to take up one line of interpretation²) was that these are products of human actions – relating to the technology and the kind of economic activity which we adopt – but that they then constrain us. For example, the form of economic activity in which we are involved dictates what kinds of jobs there will be available across many sectors of the economy, and also how human relations will be organised – e.g., within a factory. It is not that these things could not be changed. But the key idea – in Marx and in Hayek – is that it is not a straightforward matter. If we have certain institutions and patterns of social activity in place, then other things – which we might like to occur – cannot be achieved at the same time. Clearly, such claims may or may not be correct.

If, say, Marxist ideas about the limitations of social reform under capitalism were incorrect, and the 'revisionists' views were right,³ then this simply shows that the specific claims of Marx in question about such matters were wrong. This does not, in itself, imply that there is something wrong with the notion that there may be knowledge of the kind which I am here discussing, which poses the problems which I have discussed.

Another illustration is provided by demography. Ideas about 'demography as destiny' are problematic.⁴ But demography deals, often in striking ways, with the manner in which the situations in which we are now acting are structured by the consequences of various choices that people have made in the past, and typically in ignorance of what the longer-term consequences of those actions would be, at a macro level. Not only does this mean that some of our hopes about how society might be improved cannot currently be realised, and in ways the rationale for which may not be easy for us to understand. But it may be difficult to plan for our future (e.g., because of the consequences on provision for our old age of unexpected increases in life expectancy). While what would make for good public policy – e.g., in terms of population control or the encouragement of immigration – may rest on technical issues and also not accord well with our intuitive sentiments.

¹ See, for discussion of this, my 'Hayek, Keynes and the State', *History of Economics Review* 26, Winter-Summer 1997, pp. 68-82.

² What to make of Marx's ideas on this and other matters is much-contested, not least because he tended to set out key ideas briefly and sometimes in very cryptic ways.

³ See for example Eduard Bernstein, *Evolutionary socialism: a criticism and affirmation*, New York: B. W. Huebsch, 1909.

⁴ See, on this, Danny Dorling and Stuart Gietel-Basten, *Why Demography Matters*, Cambridge: Polity, 2017. It is striking the degree to which the methodological concerns which these authors raise are close to some of Popper's arguments.

All of these things will typically be matters in relation to which we will be dependent on people with relative expertise for their evaluation of the ideas in question. Such evaluation may, and in my view should, be open, in the sense that there is every reason why it should be possible for anyone to join in the discussion, if they can acquire the kind of knowledge required to understand what is going on.¹ But it might be the case that the best (fallible) knowledge which we have currently, actually tells us that some things that people generally would like to achieve within current society can't in fact be achieved.

For example, if Marx is right about relations of production, then a lot of people's hopes about large-scale upward social mobility make little sense (just because the slots for them to move into are not available, and cannot currently be made available). When, equally, if Hayek is right, egalitarian ideas about the distribution of income (as distinct from ideas about a welfare system) make little sense within a well-functioning market economy. Such claims are, obviously, fallible. Discussion about the pros and cons of such ideas is of real importance. But – and this is a key point which I wish to make – to the degree to which we do have fallible expert knowledge of this kind, we stand in need of social institutions that are in some respects more like those of Plato's *Republic*, than are those of an *Open Society* of a strongly 'fatherless' character, if we are to be able to make use of it.

As I hope that I have made clear, this does not mean that I am calling for rule by an isolated elite. What our fallible experts may be able to tell us is that, if they are right, the choices open to us are more limited than we may have expected. But provided that the claims to knowledge are themselves open to effective criticism, it will be important that our best current ideas be socially entrenched. It will also be important that it is explained to the rest of us that while it is open to us to challenge these views (and that it is stressed – in line with what I have said earlier – that it be important that channels be created which make this a real possibility), demands for change that are inconsistent with this knowledge will otherwise simply be disregarded, unless we can cogently contest the claims to knowledge itself.²

6. Some Worries about Liberalism

To get such ideas were accepted might be difficult, just because they run up against people's current almost knee-jerk anti-elitism. (The issues that I am raising tend also to be treated in terms of claims about persons, rather than ideas about knowledge.) But I think that we would be in a much better situation if they were accepted. For currently, we are at risk of policy-making being dominated by social media style 'liking' for all kinds of demands for change, or for the recognition of what people tend to regard as their rights, where those doing the 'liking' don't have to face the question of how, or indeed whether, things would work systematically, if their demands were agreed to.

¹ Which they may not have the capacity to do: I am well aware, for example, that I am simply not likely to be capable of the kind of understanding needed to grasp what is at issue in some areas of economics, despite having studied some economics and mathematics at university.

² What would be needed to implement such ideas – notably in terms of the institutional reform of social media – is not an issue which I can tackle here.

I will conclude with what might seem a rather strange diagnosis of the problems facing us here. It goes back to ideas about rights, as they were developed in the Seventeenth and Eighteenth Centuries. The underlying idea here – as, for example, is illustrated in the work of John Locke, but which is found much more widely over this period – is a notion to which Jerome Schneewind has referred as the idea of a ‘divine corporation’.¹

It is the idea that people have certain God-given duties, to discharge which they need to be accorded various rights. It was further thought that if they behave reasonably on the basis of all these things, God had fixed everything, so that the overall large-scale social consequences of their behaving in this way would be desirable. From such a perspective, agents themselves don’t need to concern themselves with macro-level issues in their societies, because all this has been taken care of by God.

Now what is significant about all this, is that we have – for good or ill – inherited, or perhaps better re-invented, rights discourse, which seems to be becoming ever more prominent. However, liberals (among whom I would count myself) seem to have lost sight of the divine corporation problem. Or, to put things another way, that if we don’t think that God has fixed it that the macro, or social-level, consequences of our acting on such a basis will necessarily be desirable, then the relation between individual action and large-scale consequences becomes a problem that we need to face, ourselves. (I.e., just what is the relationship understood to be between rights – and how claims for things that people wish for are accepted as rights – and the overall functioning of society?) Accordingly, while Popper’s ideas about piecemeal social engineering, with effective critical feedback from citizens, are really important, I think that his account needs to be supplemented by two things – which I would suggest are of equal importance, if our politics and public policy are to work sensibly.

The first, is that we need to articulate, and to critically discuss, our ideas about what the large-scale consequences of various typical human actions, or of the recognition of particular rights, will be. For we may well find that various things are attractive as claims made at the level of the individual, but are problematic if we trace through what the systematic consequences would be of having these things in place.²

Second, I have argued that there is a case for the social entrenchment of fallible expert knowledge. That is to say, for the idea that it would be desirable for us to develop institutions that constrain us from taking decisions which our best fallible conjectural knowledge rules out as problematic. Should we adopt any such proposal, we would need to make sure that such ideas are made as comprehensible as possible to those of us without the appropriate expertise to engage with them at

¹ See Jerome Schneewind’s ‘The Divine Corporation and the History of Ethics’, e.g., in his *Essays on the History of Moral Philosophy*, Oxford: Oxford University Press, 2009.

² See my ‘Contemporary Political Philosophy: post-Hayekian and Popperian reflections’, in *Conference Proceedings, Conference on Political Philosophy: Argument, Challenge and Development*, 15th-16th June, Changchun, Jilin: Jilin University: Center for Fundamentals of Philosophy etc, 2019: 79-91.

an expert level, and that our questions about them are answered.¹ At the same time, everything should be done to render them genuinely open to critical appraisal by experts and more generally by interested citizens with the appropriate ability to engage with them.

If there is anything to this - and with this, I suspect, you will be happy to take issue – it may mean that certain of our current ideas about freedom of action and freedom of speech may stand in need of modification. On this provocative note I will stop. For if I am right, here might be more to be said for certain aspects of regimes like that in Singapore,² and thus for something which in some respects is in the Platonic tradition, than defenders of the Open Society are usually willing to admit!

References

- Acton, H. & Watkins, J. (1963). 'Symposium: Negative Utilitarianism', *Proceedings of the Aristotelian Society*, supplementary volume 37, pp. 83-114.
- Berman, G. & Fox, A. (2023). *Gradual: The Case for Incremental Change in a Radical Age*, Oxford University Press.
- Bernstein, E. (1909). *Evolutionary socialism: a criticism and affirmation*, B. W. Huebsch.
- Bishop, B. (2008). *The Big Sort*, Boston: Houghton-Mifflin.
- Dorling, D. & Gietel-Basten, S. (2017). *Why Demography Matters*, Polity.
- Fuller, S. (2018). *Post-Truth*, London: Anthem.
- Fuller, S. (2020). *A Player's Guide to the Post-Truth Condition*, Anthem.
- Gauss, G. (2016). *The Tyranny of the Ideal*, Princeton University Press.
- Habermas, J. (1989). *The Structural Transformation of the Public Sphere*, MA: MIT Press.
- Hayek, F. (1944). *The Road to Serfdom*, Routledge.
- Hayek, F. (1991). *The Trend of Economic Thinking*, ed. W. Bartley & S. Kresge, University of Chicago Press.
- Hayek, F. (1997). *Socialism and War*, ed. B. Caldwell, University of Chicago Press.
- Hobsbawm, E. & Ranger, T. (eds) (2016). *The Invention of Tradition*, Cambridge University Press.
- Jarvie, I. (2001). *The Republic of Science*, Rodopi.
- Lijphart, A. (1977). *Democracy in Plural Societies: A Comparative Exploration*, Yale University Press.
- Munz, P., (2004). *Beyond Wittgenstein's Poker*, Ashgate.
- Popper, K. (1945). *The Open Society and Its Enemies*, Routledge.
- Popper, K. (1957). *The Poverty of Historicism*, Routledge.
- Popper, K. (1963). *Conjectures and Refutations*, Routledge.
- Popper, K. (1976). *Unended Quest*, Fontana.
- Popper, K. (2008). *After the Open Society*, ed. J. Shearmur and P. Turner, Routledge.
- Schilpp, P. (ed.) (1974). *The Philosophy of Karl Popper*, Open Court.
- Schneewind, J. (2009). *Essays on the History of Moral Philosophy*, Oxford University Press.
- Shearmur, J. (1996). *The Political Thought of Karl Popper*, Routledge.
- Shearmur, J. (1997). 'Hayek, Keynes and the State', *History of Economics Review* 26.
- Shearmur, J. (2006). 'The Logic of Scientific Discovery', in J. Shand (ed.), *Central Works of Philosophy: Volume 4: The Twentieth Century: Moore to Popper*, Chesham, Bucks: Acumen, pp. 262-86.
- Shearmur, J. (2010). 'Why "the Hopeless War": Approaching Intelligent Design', *Sophia* 49(4), 475ff.

¹ I hope to discuss what this might mean in more practical terms, in the light of our experiences with Covid.

² For an interesting, and quite recent, overview, see Kwon Ping Ho, *The Ocean in A Drop - Singapore: The Next Fifty Years*, Singapore: WSPC, 2015. See also my 'Singapore: Plato's Other Republic?', in G. Moore (ed.) *The Open Society and its Enemies in East Asia*, London: Routledge, 2014, pp. 132-44.

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- Shearmur, J. (2019). 'Contemporary Political Philosophy: post-Hayekian and Popperian reflections', in *Conference Proceedings, Conference on Political Philosophy: Argument, Challenge and Development, 15th-16th June, Changchun*, Jilin: Jilin University: Center for Fundamentals of Philosophy etc, pp. 79-91.
- Shearmur, J. (2021). 'Lessons from Twentieth Century Political Philosophy before Rawls' in *Routledge International Handbook of Contemporary Social and Political Theory*, 2nd edition, ed. G. Delanty & S. Turner, Routledge.
- Sunstein, C. (2016). *The Ethics of Influence*, Cambridge University Press.
- Sunstein, C. (2017). *#Republic*, Princeton University Press.
- Thaler, R. & Sunstein, C. (2021). *Nudge: The Final Edition*, Allen Lane.
- Wettersten, J. (1992). *The Roots of Critical Rationalism*, Rodopi.

Critical Rationalism and Postcolonial Experience*

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ABSTRACT

In this paper, I address the issue of the possible applicability of the ideas of Karl R. Popper's social and political philosophy in contemporary postcolonial countries. Referring to the reception of Popper's philosophy in Central and Eastern Europe, I argue that Popper's writings were effective in catalysing the political wholesale transformation by undermining Marxists' pretensions to scientific status rather than through his anti-utopian and anti-revolutionary political recommendations. In the context of attempts to apply Popper's ideas in postcolonial countries, especially Sub-Saharan Africa, I claim that the influence of Popper's social thought on the politics of those countries may not be as effective as expected or desired. A consideration of the above issue throws new light on the controversy between conservative and progressive interpretations of Popper's political and social thought. Without denying serious limitations to the applicability of Popper's political philosophy as a guide in coping with the problems of postcolonial countries of the Global South, I argue that a conservative reading of Popper's political ideas, which focuses only on his concept of piecemeal engineering as an instrument of social change, underestimates the transformative potential of his ideas and is contradicted by their inspirational role in the transformation of Central and Eastern Europe.

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Introduction

The philosophy of Karl R. Popper is known for recommending an audacious attitude in theoretical research, and a restrained, piecemeal action in social practice. For this reason, his social and political views are interpreted as politically conservative. Popper's positive programme for social change is indeed moderate. The conservatism of his political thought lies not only in his repudiation of the possibility of wholesale social transformation but also in his rejection of the utilitarian pursuit of the greatest happiness of the greatest number. Instead, he advocated "negative utilitarianism", according to which the business of government should rather be to improve the condition of the least advantaged (Popper, 1961, 361; 370; Watkins in: Acton & Watkins 1963). Moreover, Popper's post-war political sympathies, which gradually moved from the German socialist Chancellor Helmut Schmitt to the conservative Chancellor Helmut Kohl, testify to his conservative tendencies. At the same time, however, Popper is credited with inspiring a wholesale and indeed revolutionary political, economic, and social transformation of Central and Eastern European countries, and his ideas helped to undermine the communist system as a whole. This suggests that Popper's ideas, though expressly anti-revolutionary, do have an undeniable emancipatory potential. Viewing Popper as a conservative makes it difficult to understand why his ideas helped to precipitate a comprehensive change in Central and Eastern Europe.

The above ambiguity is reinforced by the customary interpretation of Popper's work as consisting of two separate contributions: the revolutionary, indeed "Trotskyite" philosophy of science, and the anti-revolutionary political philosophy, which obviously differ not only in their subject matter but also in the boldness of his methodology and the timidity of his social recommendations. Though this view was expressly contradicted by Popper's own claim that his political philosophy is an extension and application of his ideas in the philosophy of science, it did little to settle the matter. For example, John Watkins's argument on the unity of Popper's thought (Watkins, 1974), was contested by Anthony A. Derksen (1985). Raphael Sassower (2006) pointed out and aptly summarized a number of other important ambiguities both in Popper's philosophy and in its interpretations (esp. Sassower, 2006).

In this paper, I address the above ambiguity of the existing interpretations of Popper's philosophy. In Part I, I argue that the unity of both parts of Popper's philosophy may be sought especially in its subversiveness. From this point of view, a conservative interpretation of Popper's political ideas, which stresses his concept of piecemeal engineering, underestimates the transformative potential of his work. It is also contradicted by the inspirational role of Popper's ideas in the transformation of Central and Eastern Europe. Despite this, in Part II, I claim that there are serious limitations to the applicability of Popper's political philosophy as a guide in coping with the problems of postcolonial countries of the Global South, and conclude that this fact does not help to dispel the above ambiguity.

Part I

The Subversiveness of Popper's Thought

It has been remarked that “giant slaying” was a significant motif in Popper’s intellectual life (Kapuściński, 1995; Shearmur, 1996: 39; 196; Watkins, 1997: 213). Indeed: his philosophy of science subverted the inductivist and empiricist views of scientific knowledge, for millennia entrenched in philosophical thought. In challenging the view of exponents of logical positivism, but also those of psychoanalysis, Popper was not daunted by the stature of such thinkers as Rudolf Carnap, Moritz Schlick (Popper, 1992, 98-101) or Sigmund Freud (but see Kenaw, 2010).

The subversiveness of Popper’s political ideas is less straightforward. On the one hand, his “war work”, as he called his *Open Society* (Ryan, 2013, xvi) was designed, first and foremost, to subvert the historicist philosophical ideas which, as he argued, undergirded the totalitarian Nazi and Communist regimes. In his revisionary and controversial interpretations of political philosophy, he was undeterred by the authority of Plato, Aristotle, Hegel, or Marx, and sought to demonstrate that the roots of totalitarianism may be found in their philosophical conceptions. The echoes of the scandal he provoked by such claims reverberate through the philosophical milieu until today.

On the other hand, however, the claim on the subversiveness of Popper’s philosophy is *prima facie* undermined by his positive programme for social reform, based on the idea of piecemeal social engineering which is in glaring contrast with the radicalism of his political critique of the most revered philosophical minds. Popper’s programme of permissible social change, formulated to counter the utopian ideas of revolutionary Marxism, was grounded in an epistemological and methodological demonstration of the unfalsifiability of Marx’s historical materialism. By undermining the claims to scientific status espoused by the Stalinist Marxists, the argument had a damaging effect on the public perception of the doctrine, particularly in Central and Eastern Europe many years prior to the watershed change in 1989. Popper’s methodological argument did more to upset Marxists’ claims to the scientific status of their doctrine than any other known criticisms, thereby irreversibly undermining also their political authority and legitimacy. Thus, even though Popper as a political philosopher was not a revolutionary, his ideas, paradoxically, turned out to be performatively subversive in an area of politics in which he recommended a restrained attitude.

The above, however, may be read as an argument against the possible applicability of Popper’s political theory in dealing with the present problems of the postcolonial countries: after all, the currently prevalent regimes in such countries, though often repressive and far from accepting the ideals of Western liberal democracy, are not communist, nationalist, or totalitarian. Thus, an answer to the question of the possible efficacy of Popper’s thought in the postcolonial context, if there is one, is to be sought elsewhere. A more detailed analysis of the functioning of Popper’s work in Central-European countries may offer some clues.

The region of Central and Eastern Europe was receptive to Popper’s work ever since his *Logik der Forschung* was published in 1934. Before World War II, a particularly important role in the propagation of Popper’s philosophy and methodology of science was played by scholars of the

Lvov-Warsaw School of Logic and Philosophy who paid close attention to the developments in the Vienna Circle and around it (Woleński, 1985; 2003). It is worth stressing that members of the school were not only interested in Popper's ideas: some of them, like Alfred Tarski (1956) and Janina Hossasion-Lindenbaum, significantly influenced Popper's subsequent development, something he readily acknowledged. Also, despite censorship and repressions, Popper's methodological ideas were lively debated during the post-war period under communist rule. While the influence of Popper's philosophy of science was restricted to academia, his political philosophy, though officially banned, enjoyed a wider interest. His *Open Society* was read by the anti-communist groupings ever since its original appearance in 1945 and its translation circulated in typed copies since the 1950s, and later in a samizdat edition. Thanks to this, Popper's concept of the open society became a keyword in Central European political vernacular. In this way, his ideas strongly informed an important group of liberal intellectuals who later became leaders of the "Solidarity" movement which toppled the communist regime in Poland in 1989.

One may say that by insisting on piecemeal engineering as the only acceptable way of social change, Popper seemed not to appreciate the gravity of the challenges facing various regions of the world. His belief that while the world may not be the best of possible ones, it is the best of the available ones, is likely to have prevented him from perceiving some existing evils as things to be remedied. It stood in the way of his recognising that a comprehensive change is sometimes necessary. Popper did not seem to understand that focusing only on a piecemeal change very often does not go to the heart of the problem. He also did not seem to fully appreciate the fact that established social structures always resist attempts at reforming them. Political radicalism enjoins one to be a realist by demanding the impossible. Popper's political realism was about trimming our goals to the possibilities afforded to us by the established social and political system rather than the pursuit of what the system wants us to believe is impossible. More importantly, he did not see it as an issue that quite often we become accustomed to unjust social structures to the extent that their evils escape our attention due to the structural and symbolic regime constantly shaping our perception of social and political realities. The task of revealing and making us aware of this structural violence is the job of a genuinely critical social theory. In this respect, Popper's critical rationalism proved to be insufficiently critical, and the approach to politics he advocated had a strong conservative dimension.

Despite all the above, the region of Central and Eastern Europe had undergone a thoroughgoing change in a non-violent way through a dialogical process which may be viewed as an implementation of Popper's conception of rational method: "rationalism is an attitude of readiness to listen to critical arguments and to learn from experience. It is fundamentally an attitude of admitting that 'I may be wrong and you may be right, and by an effort, we may get nearer to the truth,'" (Popper, 2013 [1945], 431). It is this principle that best expresses the subversiveness of Popper's ideas both in his theory of science as well as in his theory of society and political change. Its subversiveness lies in the belief that in science and politics alike no one is in possession of the

final and uncontestable truth. Knowledge is not a justified true belief: it is unjustified, untrue unbelief (Miller, 2012, 97). Just as science is an unending quest, so politics is a perennial pursuit of the best possible forms of social life in circumstances that are constantly transformed by the very pursuit.

Central and Eastern European intellectuals found in Popper three things. First, an incontestable demonstration of the unscientific nature of allegedly scientific Marxism; second, the idea of openness of a society which was understood by them as a call for democratic participation in the government, transparency of political power, and its accountability; third, they saw in his political works great intellectual energy, or, as Watkins put it, “demonic force” which instilled in them a belief that a regime supported by a glaringly false doctrine cannot last indefinitely. His ideas catalysed the people’s faith and helped to unite their political energies. So, even though Popper believed that holistic change is not only utopian but also inevitably violent, his idea of open society nevertheless inspired a large-scale comprehensive transformation. His ideas thus turned out to have not only a theoretical force but also a performative one; they acquired a transformative or indeed subversive power from people’s belief in them. Popular energy was awoken not so much by the idea of piecemeal engineering, backed by Popper’s and Hayek’s complex epistemological arguments, but by the alluring prospect of living in an open, transparent, and just society, resembling the Western democracies which Popper claimed to be the best of existing worlds (Popper, 1989, 369). One may thus justifiably say that Popper performed the role of ideologue of the peaceful revolution of 1989 in Central and Eastern Europe (Miller, 1997, 400; Hacohen, 2000, 540). Towards the end of his life Popper, who spent most of his life fighting the enemies of the open society and lived long enough to see their demise, rejoiced in the fact that the peaceful revolution took place.

Self-Poisoning of the Open Society

The intellectual and political leaders in Central and Eastern Europe seemed to be aware of the imperfections of the Western democratic capitalist system they strove to implement, but they strongly believed that Western political arrangements cannot be bettered. They perceived the liberal democracy and capitalist economy as a self-correcting system, capable of dealing with all forms of injustice and immunised against any serious instabilities. In other words, they believed that if our problems will ever get solved, they will be done away with by the theory and practice of political liberalism, democracy, and the free market. Such an attitude, though perhaps in line with some Popper’s opinions, was much against the Popperian spirit. The error involved was precisely the error of historicism, essentialism, and finalism which he criticized. Such an attitude is based on the mistaken belief that society, once opened, will remain open forever after. In other words, the attitude disregarded Popper’s warning that the future course of society cannot be predicted, and, *a fortiori*, its future problems are equally unpredictable (Popper, 1963, v-vi).

Unsurprisingly, the initial success of the transformation in Central and Eastern Europe revealed deep-seated tensions which had drawn the societies into internal conflicts. Neoliberal reforms

produced their own problems, most especially extreme economic inequalities. As a result, those countries, presented as models of successful political transformation from communism to liberal democracy, became divided by social and political discontent and slipped into a self-imposed closure again. Popper's belief in the Socratic method of solving problems through dialogue gave way to the politics of mutual contempt. Neophyte neoliberals did not pay attention anymore to Popper's warning not to make a godhead of the free market (Chmielewski, 1999, 36). Popper's cosmopolitan ideas have been replaced by appeals to national sovereignty and ethnic pride; the countries, especially Poland and Hungary, have become a seedbed of rampant nationalism, which Popper strongly criticized as the principle of national self-determination (Popper, 1999, 149). Inclusionary ideas advocated by Popper were superseded by radical exclusionary, xenophobic, and racist ideologies. A telling symbol of the reversal is the fate of the Central European University, established in Budapest in 1991 by Popper's pupil George Soros. The University, known for its active promotion of Popper's critical rationalism, has been expelled in 2018 to Vienna by former Soros's protégé Victor Orban, presently the Hungarian prime minister, who swapped his initial and ardent allegiance to liberal democracy for no less ardently professed and implemented "non-liberal democracy." Some Central and Eastern European countries have become repressive, intolerant, and corrupt regimes. To use Leszek Kołakowski's prophetic phrase, the newly open societies fell victim to self-poisoning (Kołakowski, 1990). Popper was much incensed by this claim; as he wrote in a letter, "Leszek Kołakowski[s]... opinions about my work are totally mistaken" (Popper to Chmielewski, April 8, 1991).

George Soros, a billionaire who claims that he owes his fortune to the practical application of Popper's philosophy, is a dedicated advocate of the idea of the open society which he actively promotes in many troubled places in the world, Africa included (Soros, 1995; 2010). At the initial stages of the wholesale transformation of the Eastern European countries, he argued that they may become permanently democratic only on the condition of substantial assistance from the West which should help them to turn their aspirations into reality. The financial aid, access to the European Common Market, promotion of the cultural and educational ties between the East and the East, and eventually inclusion of Eastern Europe into the European community would foster the pluralistic societies in the region and "prevent the continent's future repartitioning" (Bessner, 2018). Soros believed that the problems emerging in the transformation of the Eastern part of Europe were a result of the unwillingness of the Western world to extend the necessary assistance (Soros, 1995, 178).

As a matter of historical fact, however, all the preconditions of stabilisation of the open and pluralist regimes, specified by Soros, *have* been satisfied: the countries in question did receive ample financial aid, they gained access to the European market, the cultural and educational ties between the West and the East have been formed, and they have also been included into the European community. Yet this tremendous effort and assistance did not bring about the expected result and did not prevent those countries from relapsing into non-democratic forms of government.

The reversals occurred very much in accordance with Popper's diagnosis of paradoxes of democracy, freedom, tolerance, and sovereignty (Popper, 2013, 581-582). For example, Hungary and Poland, the countries which spearheaded the democratic and liberal change in the region, three decades later turned to nationalism and authoritarianism.

Ironically, among the victims of this turnaround was Popper's philosophy itself. His political philosophy, the "charter of cold-war liberalism" (Hacohen, 2000, 2), once informing the everyday public discourse, suffered a dramatic setback. His idea underlying the concept of the open society became a subject of criticism and fell into oblivion. The following incident from my teaching practice may serve as an illustration. Optimistically assuming that the very mention of Popper's name will be as informative for my students as it had been for me, I recommended to my students to read Popper as an inspiration for their essays. After the lecture one of the students approached me and asked with a rather puzzled look on her face: "Professor, do you really want us to read Potter? Harry Potter?" More seriously, Popper's idea of the open society, the symbol of the initial political aspirations of the region, along with Soros's charitable activities, became anathema to many of its leaders.

Part II

Popper and the Post-Coloniality

Volumes have been written about problems of postcolonial countries. There is none written by Karl Popper among them. He addressed the topic of colonialism only obliquely, in the context of his criticism of Marx's political economy. He did so by taking the concept of colonial exploitation into quotation marks and suggesting that he did not consider colonialism exploitative, though simultaneously claiming that "although the misery imposed upon the natives through colonization is one of the darkest chapters in the history of civilization, it cannot be asserted that their misery has tended to increase since the days of Marx. The exact opposite is the case; things have greatly improved" (Popper, 1945, 393-394). He rarely referred to colonized regions, only once expressing his satisfaction with the end of apartheid in South Africa (Popper, 1994, 149).

Reciprocally, Popper is referred to by contemporary postcolonial scholars, if ever, as an author of a significant contribution to the philosophy of science and methodology (e.g. Masolo, 1994, 124; Táíwò, 2004, 310) rather than a political thinker. Oseni T. Afisi, a Nigerian philosopher, recently attempted to tap into Popper's *oeuvre*, seeking in it some guidelines for possible solutions to political problems in Nigeria (Afisi, 2016a; 2016b; 2020). He sought to reconcile Popper's individualist ethics with the traditional Afro-communal one, and more recently he assembled numerous thinkers to search in Popper's work for inspiration to the solution to Sub-Saharan problems. In the now-published volume (Afisi, 2022), they discuss such issues as the problems of equality, postcolonial justice, epistemic justice, and decolonization of philosophy. Following Afisi, I shall confine myself below mainly to a reference to the Sub-Saharan postcolonial experience, and to his attempt to employ Popper's social and political ideas as a guideline for much-needed reform in Nigeria.

Though greatly appreciative of Popper's ideas, Afisi stressed Popper's conservatism and insufficiency of his programme of permissible social reform. Despite his evident enthusiasm for Popper's philosophy, Afisi critically assessed its possible efficaciousness in dealing with problems that postcolonial Sub-Saharan Africa must cope with nowadays. As he argued, Popper's insistence on boldness and audacity in theoretical investigations was not coupled with an analogous call for bold intervention into social and political matters, much to the contrary (Afisi, 2020, 11). He also attempted to demonstrate, against Popper, that it is possible to design social engineering in a way which would be more than piecemeal yet not fall into unmanageable holism and rash utopianism. Below I shall argue that the issue of the practical efficacy of Popper's political thought cannot be reduced to the assessment of his view as to the acceptable and unacceptable political reforms.

Afisi sets out to fill the lacuna between Popper's audacity in theory and his timidity in practice. Influenced by Shearmur's criticism of the idea of piecemeal social engineering (Shearmur, 1996, 57-61; Sassower, 2006, 137), he argues, against Popper, that social scientists *are* able to gain an understanding of co-variation even if they do not have full control of all variables in a reformed system.

Relatedly, then, piecemeal engineers could operate on more than one factor at once and potentially still learn from their mistakes. They would need to use statistics and regression analysis but by these means they could combine 'many-pieces-at-once' piecemeal engineering with qualities of trial and error, learning from their mistakes in bits and pieces. The key issue, therefore, is limiting and controlling experimental variables so that causal factors can be identified" (Afisi, 2020, 15).

The suggested modification aims to demonstrate that such a multitasking social engineer who wants to learn from his own mistakes to be able to correct them, does not have to be a holistic designer or a revolutionary (Afisi, 2020, 15). The issue is not limited to the questions of the methodology of social sciences and has direct relevance to social reform much needed in such countries like Afisi's native Nigeria. Commenting upon Popper's piecemeal engineering, Afisi states that "[i]f one considers [...] the continent of Africa where I am from, where there are a great many socio-economic problems, upon which one would surely want work done many-pieces-at-once" rather than piecemeal social engineering as envisaged by Popper (Afisi, 2020, 14).

Though Afisi is vague in specifying troubles afflicting his native Nigeria, my own Nigerian experience, though all too brief and confined to the largest Nigerian city of Lagos, suggest that the challenges the country faces are indeed overwhelming. Despite being one of the world's largest oil producers, most of the Nigerian population is extremely poor. It has been argued that the chief source of the Nigerian problems is the corrupting poison of immense riches coming from oil struck in 1956 and the inability to deal with it properly by the Nigerian authorities. Suffice it to say that between the years 1970 and 2000 Nigeria earned more than \$350 billion from oil. In the same period, however, the poverty rate rose from 35 to 70 per cent. Its economy, including traditional

strong Nigerian agriculture, shrank by nearly 70 per cent; as a result, hunger has become a widespread problem in this rich and fertile country. A comparison with Indonesia is illuminating. In the 1960s Nigerians and Indonesians had more or less the same average income, and their countries earned similar amounts from oil. Yet in this period, Indonesia's economy has quadrupled, while Nigeria's has contracted (Shaxson, 2007, 24). The difference may be explained by pointing to postcolonial heritage, ethnic squabbles, religious diversity, etc. However, the most important reason for the deplorable condition of Nigeria seems rather that the postcolonial successive governments, too busy with privatizing the proceeds from the national wealth and transferring them abroad, are not excessively bothered with the modernization of the country. The immense riches flowing to Nigeria from oil sales do not help to democratise the country or to improve the condition of living of its population. Indeed, the reverse is true. According to a former high-ranking Nigerian politician, in the past, the civil servants in Nigeria were watchdogs of the commonwealth; now they are part of the looting (Shaxson, 2007, 25).

Afisi seems thus right: immense problems generated by misgovernment will not be done away with by means of piecemeal reform. What is needed is, first and foremost, the rule of law, and accountability of the government which are part and parcel of Popper's idea of the open society. Transparency of the government alone, though vital, will be insufficient, however: after all, anyone paying attention has been able to point out the culprits for decades. The practical question is how to instil accountability in a country whose untransparent government, immersed in corruption generated by oil money, does not respect the rule of law nor cares about the common good. It should be remarked that the revolution in Central and Easter European societies, which succeeded in establishing more or less accountable governments, did not follow Popper's recipe for reform, on the contrary: the change was affected by means of the general strike, a weapon taken from Rosa Luxemburg's revolutionary armoury rather than from the liberal ideology. Such tactics were possible, however, in a situation of a strong and well-organised working class, something which is missing in present-day Nigeria.

Individualism vs. Tribalism

Moreover, and paradoxically, the opening of Nigeria to the world economic system, instead of doing away with its traditional tribalism, only enhanced it. The new Nigerian tribalism draws its vigour both from the opposition to Western influence and from a desire to tap into the stream of oil money. Ethnic distinctions between Yorùbá, Igbo, Hausa, Edo, Ijaw, Fulbe, Kanuri, Urhobo-Isoko, Ibibio, Ebira, Nupe, Gbagyi, Jukun, Igala, Idoma, and Tiv, divided further into clans, are employed as entitlements to their share in the oil proceeds. As to be expected, this generates animosities between them instead of unity, additionally amplified by religious differences between Christian, Muslim, and traditional African denominations. In view of this, the option of a popular movement working for a unified vision of Nigerian society seems immediately unavailable. No wonder violence is the primary mode of protest against the overall situation in Nigeria.

The following example will help to underline the major difficulty in adopting the attitude of mutuality recommended by Popper in the Nigerian predicament. Alhaji Mujahid Dokubo-Asari, a well-educated leader of the Ijaw opposition, disappointed with Nigerian politics, concluded that “dialogue will lead us nowhere” and organised a military organisation Niger Delta People’s Volunteer Force to protect the interests of the increasingly disinherited people of Niger Delta (Shaxson, 2007, 192). Another example of social discontent is the radical militancy of Boko Haram who not only kill people and abduct children to extort ransom. They also steal food grown by small farmers in the villages, leaving them without means of subsistence. By destroying their livelihood, they undermine domestic agriculture and push people to urban centres such as Lagos. Boko Haram’s activity perfectly illustrates Thomas Hobbes’s view of the state of nature: “In such condition, there is no place for Industry; because the fruit thereof is uncertain; and consequently, no Culture of the Earth” (Hobbes, 1996 [1651], 84). In view of the complexity and gravity of Nigerian problems, piecemeal social engineering seems utterly ineffectual. One may argue that Central and Eastern European party nomenclature was no less corrupt than the Nigerian one, but the resources available up for their grabs were diminutive in comparison to the Nigerian riches and for this reason were more amenable to engage in the dialogue with revolted societies. It thus seems that countries like Nigeria, stuck in the deadlock between the ineffectuality of piecemeal improvement and the impossibility of a revolutionary change, are condemned to a drifting gradual change whose course will be haphazardly determined by the ongoing antagonism between untamed capitalist forces and a disorganized, discontented, and impoverished society.

In startlingly psychoanalytical terms Popper asserted that Western civilization “has not yet fully recovered from the shock of its birth – the transition from the tribal or ‘closed society’, with its submission to magical forces, to the ‘open society’ which sets free the critical powers of man” (Popper, 2013, xvli; Kenaw, 2010). Accordingly, he aimed to show that “the shock of this transition is one of the factors that have made possible the rise of those reactionary movements which have tried, and still try, to overthrow civilization and to return to tribalism. And it suggests that what we call nowadays totalitarianism belongs to a tradition which is just as old or just as young as our civilization itself” (Popper, 2013, xvli). Popper’s liberalism was formulated in opposition to collectivist ideologies of nationalism and communism. In extolling the values of Western civilisation, he condemned tribalism to which, as he argued, the Nazis and Communists intended to return. Ernest Gellner, a robust champion of critical rationalism, took a differing view of the matter (Gellner, 1983; 1997). Afisi argues that Popper’s individualism in fact assumes some elements of communitarianism. As he claims, Popper well understood that it is

Hardly possible for individuals to author their own values without truly engaging critically with others. This is a communitarian impulse which reflects the intersubjectivity in rational reflection, and the inevitability of critical appraisal by others of the way we ourselves are in social interaction. In this respect, Popper found a middle ground between the negative and positive concepts of freedom.

In fact, Popper's concept of freedom is a balance between negative freedom and positive freedom. (Afisi, 2016a, 2).

Following Philip Pettit, Afisi argues that cognitive processes demonstrate human mutual dependence on each other. Coming up eventually with a concept of liberal communitarianism, he attempts to place Popper's views halfway between liberalism and communitarianism by highlighting the "inherent social aspect of Popper's liberalism" which underpins the emergence of a coherent liberal concept that derives support from the nature of the social character of the self and the social nature of human consciousness (Afisi, 2016a, 13).

Afisi's endeavour to stress a communitarian dimension in Popper's theory of knowledge and his political philosophy seems, on the one hand, incomplete, and, on the other, too generous to Popper. First of all, Afisi's interpretation of Popper as a liberal-communitarian overlooks his concept of abstract society through which he intimated the importance of rich social relations for a human individual.

Popper explained the idea of abstract society as "a society in which men practically never meet face to face – in which all business is conducted by individuals in isolation who communicate by typed letters or by telegrams, and who go about in closed motor-cars. [...] Such a fictitious society might be called a 'completely abstract or depersonalized society'" (Popper, 1995, 166). He went on to say that "our modern society resembles in many of its aspects such a completely abstract society. Although we do not always drive alone in closed motor cars (but meet face to face thousands of men walking past us in the street) the result is very nearly the same as if we did—we do not establish as a rule any personal relation with our fellow-pedestrians." (Popper, 1995, 166). Despite advocating individualism, Popper formulated a mild critique of the abstractness of modern societies by saying that many people living in them "have no or extremely few intimate personal contacts, who live in anonymity and isolation, and consequently in unhappiness. For although society has become abstract, the biological make-up of man has not changed much; men have social needs which they cannot satisfy in an abstract society" (Popper, 1995, 166).

The above may seem to support Afisi's argument that Popper was aware of the importance of social relations not only in the pursuit of knowledge but also in social life. At the same time, secondly, in comparison with robust claims of contemporary communitarians, especially Alasdair MacIntyre (1984), communitarian elements in Popper are rather thin and do not go beyond a mere acknowledgement of the individual's need for intersubjective relations with other human beings. For this reason, they cannot become a ground for any normative claims which would bring him closer to anything resembling communitarian ethics.

The point has been persuasively made by Thaddeus Metz who challenged the attempt to square Popperian liberal values of the open society with African morality. Building upon the *Ubuntu* wisdom that "A person is a person through other persons", the contemporary research on African ethics (e.g., Tutu, 1999; Masolo, 2010), as well as his own extensive investigations, Metz argues that there is a decisive if not unsurmountable difference between the moral outlook advocated by

Popper and the one inscribed in the Afro-communal ethics (e.g. Metz, 2011; 2014; 2015). He demonstrates that for Popper, the worth of a human being comes from her capacity for rationality, while in Afro-communal ethics it is a result of the human capacity for relationality” (Metz, 2020, 9). According to Metz, it is not

this communal relationship that has a basic moral value, but rather an individual’s natural capacity for it. Typical human beings, for example, have dignity insofar as they are in principle able both to be communed with and to commune. The highest moral status accrues to human persons generally, beings that by nature can be both objects of a harmonious relationship, viz., able to be identified with and cared for by others, and subjects of it, able to identify with and care for others. (Metz, 2020, 10).

This allows him to point out two major differences between the liberal Enlightenment morality advocated by Popper, and the traditional African ethical views. One of them is that if a person fully capable of reasoned decision-making was unable to cooperate with others, she would still be considered by Popper as possessed of dignity, yet from the point of view of Afro-communal ethics, her dignity would be questioned. The other difference is that Popper deems human rational agency sufficient to confer dignity upon an individual, whereas within the Afro-communal perspective, human dignity has its source in the individual capacity to exhibit solidarity toward others (Metz, 2020, 11).

The Best of Possible Worlds

We are thus presented with a choice between two moral outlooks which seem incommensurable: western culture is individualistic, while African cultures are collectivist. Popper had no doubts about which of these two moral views is better. His claim about the Western world being the best of the existing worlds reappears in an even stronger version:

I think that our world and the human beings in it are both wonderful. Of course, I know there are also a lot of bad things in our world, and yet it is still the best there has ever been in history. (...) I am prepared to defend myself against anyone and argue that the general moaning about the evil world in which we live – which may be called the dominant religion of our times – is in conflict with all the facts (Popper, 1999, 99-100).

He extolled European rationality whose roots he located in ancient Greece, and which culminated in western science and technology. The main feature of the openness of a society is the rationalism of its members; the conflict between rationalism and irrationalism “broke out for the first time in the Middle Ages, as the opposition between scholasticism and mysticism. (It is perhaps not without interest that rationalism flourished in the former Roman provinces, while men from the ‘barbarian’ countries were prominent among the mystics)” (Popper, 2013, 434).

Popper was not the only Western philosopher to make such a claim. Edmund Husserl argued that Europe is a site of the emergence of universal and rational thinking *par excellence* and the

motherland of universal truth. He also argued that its ultimate aim should be seen as a spiritual aim for all nations and individuals. “The spiritual *telos* of European humanity, in which the particular *telos* of particular nations and of individual man is contained, lies in the infinite, is an infinite idea toward which, in concealment, the whole spiritual becoming aims” (Husserl, 1970, 275). Jan Patočka followed in the footsteps of his mentor in asserting the spiritual Greek element as the essence of authentic Europeanness and the driving force of its historical expression. Both thinkers, very much like Popper, distinguished those European tendencies as fulfilling the philosophical vocation from those which, through the instrumentalization of human rationality, repudiated it (Alexandravicius, 2019, 163). It is worth remarking that while Popper praised the Sophists for their egalitarian views and harshly criticised Plato and Aristotle for their proto-totalitarian antiegalitarian conceptions, Husserl, on the contrary, repudiated the relativism of the Sophists and adopted the Platonic rationalist epistemological position.

Popper, however, went on to formulate an even stronger claim: “My main thesis is that not only are we doing better economically, we are also morally better” (Popper, 1999, 100).

Several things need to be said in relation to this bold assertion. First of all, the rationalist universalism informing this claim was a foundation of the Enlightenment liberal cosmopolitan politics of which Popper has been an outspoken exponent. According to this version of cosmopolitanism, all human beings are essentially equal and deserve equal treatment. That liberal intellectual order, however, established upon the Enlightenment concept of individual rationality, encouraged practical action and politics which utterly and callously belied its declared universalism. In particular, by attributing rationality to white men, it tended to deny it to women and people of colour, and has lent itself to extreme racist distortions (Mignolo, 2011, 181-209; Losurdo, 2014, 16).

Secondly, such construal of the Western world, based on moral opposition of the good and evil elements, is likely to cater, as it did, to a variety of questionable attitudes. The most benign is the attitude of moral exoticism with which people of the West tend to view nations of other continents and other skin colours. It also caters to the attitude of “orientalism” diagnosed by Edward Said. In its most extreme forms, it encourages the occidental exclusionary, racist and supremacist ideologies and policies. The most recent and painful proof of that tendency is the present continuous crisis of mass migration of peoples from non-European regions who seek shelter from the consequences of wars staged by the European and other Western countries on their territories, as well as the Black Lives Matter movement, aimed against the racist policies in the United States of America and elsewhere. The universalist cosmopolitanism based on the idea of Europe, or the Western world, as embodying the supreme human values, has been all too easily construed in an exclusionary way.

Thirdly, this well-intended approach is undermined by the fact that the Western world owes its economic superiority not only to intellectual, rational, and technological skills but also to the ruthless exploitation of the peoples of other continents, most especially and tragically, the peoples of Africa. For example, the US foreign aid extended to countries in need works in fact as a domestic

subsidy for American agricultural and manufacturing interests: the aid is extended on the condition that it is spent on the purchase of American goods (Sassower, 2017, 195). No less exploitative are the Chinese and European economic activities in Africa. More generally, after a decade since the Structural Adjustment Programs were imposed by the World Bank and the International Monetary Fund in 1986 on many African countries, Nigeria included, there was no measurable economic progress registered in the countries affected. Instead, after a decade of the implementation of these programmes, “Africa economically is much worse off today than it was a decade ago” (Ogbonna, 2012, 54).

Popper’s admiration for the culture of Britain is unlikely to win him sympathy in India, the Middle East, and Mesopotamia, or “Arabia”, where the British are remembered as ruthless colonists who disregarded the value of the lives of the local populations. The Indians remember the Amritsar massacre in 1919, perpetrated by the British. Popper’s hero Winston Churchill is remembered in India for his refusal to send food to India to alleviate the famine which contributed to the death of three million Indians. Iraqis were indiscriminately killed by the British in aerial bombardments, a scheme conceived by Churchill and Thomas Edward Lawrence, known as Lawrence of Arabia. Public condemnation of this practice was defended by assurances that “[Iraqis] have no objection to being killed” (Satia, 2008, 249) and the belief that the fate of Iraqi women and children killed in bombing should not trouble the British conscience, because local “[sheikhs] ... do not seem to resent ... that women and children are accidentally killed by bombs” (Satia, 2008, 250). It is unfortunate that Popper, like other occidental philosophers, did not see it worthwhile to dwell upon this dark aspect of Western civilization. The idea of the superiority of the West, especially its moral superiority, is thus not just a myth. It is a perverted lie which obscures atrocities inflicted by the European colonial powers on peoples outside their continent.

Popper’s work in the area of political philosophy is not only an exercise in historical interpretation and analysis. His opposition between open and closed societies, together with the contention about European moral superiority, is an attempt to redefine the European civilisation. More specifically, his argument purports to disown and expunge the attitudes of exclusion, racism, and superiority towards non-European peoples from the European tradition, and to present them as foreign to the genuine European spirit. There are several problems with this.

First, as Popper himself argued, the values which he saw as inimical to the humanitarian tradition have been inscribed from its very beginnings into the European tradition by its greatest thinkers, especially Plato and Aristotle, but also by Pericles, admired by Popper, who introduced in Athens a law which deprived the Athenians of mixed origin (*vóthoi*, a concept closely resembling the Nazi term of *Mischlinge*) of the civil rights, including the right of inheritance. This exclusivist tradition played no less, and in fact more, constitutive role in Western philosophical thought than the works of the champions of egalitarianism. The recurrent vigorous revival of the tradition of European exclusivism suggests that Europe cannot deny what defined its identity and tradition for more than two millennia.

Second, the very idea of openness, the pillar of Popper's political philosophy, suffers nowadays, again, from a strong backlash. It affects not only the region of Central and Eastern Europe, which only recently emerged from the communist predicament and now slide into nationalist authoritarianism. The backlash against openness is also prominent in the countries of "old" Europe, including France and Germany, and other colonial powers of the past, as well as in the United States of America. It is also strong in Great Britain, a country which Popper admired the most. The revival of exclusionary attitudes is often presented as a perfect example of the return of the repressed. Their persistence demonstrates that they are not accidental perversions instilled in the European tradition by evil-minded personalities or imported from elsewhere: they are a part and parcel of the European tradition.

Third, the idea of an open society does not look better when approached from the point of view of postcolonial societies. One may argue that their condition is, paradoxically, not a result of some indigenous tribal traditions, but rather, on the contrary, a result of their excessive openness to foreign, especially Western influences. If those societies are undergoing enclosure, this is due, first and foremost, to the overpowering external impact of forces which never treated them in a partner-like manner and instead projected their own exclusivist ideologies and practices onto them. Former European colonies continue to bear deep scars of their dark past, while their attempts to emerge from subalternity are effectively hampered by new ways of exploitation and denigration. It thus seems that it is not the postcolonial peoples who should strive toward openness but rather the Western world in its relation to them.

Exclusionary Cosmopolitanism

Popper was a Eurocentric cosmopolitan both in his thinking and life. He supported his cosmopolitanism by invoking the concept of equality and the attitude of egalitarianism. He repeatedly appealed to the Sophists' doctrine of equality against Plato's idea of a hierarchical society, and claimed that "equalitarianism" was the arch-enemy of Plato (Popper, 2013, 89). Obviously, any concept of cosmopolitanism as the basis for a normative political theory has to include the idea of human equality. There are two problems with Popper's cosmopolitanism, however. First, the very idea of cosmopolitanism is difficult to reconcile with the claim of the superiority of the Western world. Secondly, in his discussion of equality, Popper did not dwell on the ambiguity of equality and never fleshed out in detail his understanding of this concept. Ambiguities of equality may be illustrated, for example, by the fact that John Rawls, undoubtedly an egalitarian, in his difference principle postulated the *unequal* treatment of individuals in society just to achieve an overall result of social equality. More comprehensively, Amartya Sen, having distinguished several meanings of the concept, stressed that equality is advocated by most diverse doctrines, sometimes opposed to each other: "In each theory, equality is sought in some 'space' (that is, in terms of some variables related to respective persons), a space that is seen as having a central role in that theory" (Sen, 2009, 292). Boaventura de Sousa Santos draws attention to other problems:

Equality, understood as the equivalence among the same, ends up excluding what is different. All that is homogeneous at the beginning tends eventually to turn into exclusionary violence. World experience is highly diverse in its struggle for equality, and such diversity refers as much to means as to ends. This much has been claimed again and again by the social movements against sexual, ethnic, racial or religious discrimination (Sousa Santos, 2006, 37).

Commenting on Frantz Fanon's concept of the racialization of inequality, Jean-Paul Sartre scathingly remarked on Western ideologies in the following way:

What empty chatter: liberty, equality, fraternity, love, honor, country, and what else? This did not prevent us from making racist remarks at the same time: dirty nigger, filthy Jew, dirty Arab. Noble minds, liberal and sympathetic – neocolonialists, in other words – claimed to be shocked by this inconsistency, since the only way the European could make himself a man was by fabricating slaves and monsters. As long as the status of 'native' existed, the imposture remained unmasked. We saw in the human species an abstract premise of universality that served as a pretext for concealing more concrete practices: there was a race of subhumans overseas who, thanks to us, might, in a thousand years perhaps, attain our status. In short, we took the human race to mean elite. Today the 'native' unmask his truth; as a result, our exclusive club reveals its weakness: it was nothing more and nothing less than a minority. There is worse news: since the others are turning into men against us, apparently, we are the enemy of the human race; the elite is revealing its true nature – a gang" (Sartre, 1963, lvii-lix).

As the above demonstrates, the concept of equality is beset with serious ambiguities. Moreover, until quite recently it was disparaged and ridiculed within neoliberal discourse. Nowadays, however, at the time of extreme economic and social inequalities, it undergoes a process of detoxication and becomes once again a legitimate concept not only in the economic theory, as in Thomas Piketty, Anthony Atkinson and others, but also a part of social and political agenda across the world. This suggests that equality, as an element of a possible cosmopolitan normative political theory, is as urgent issue as Popper argued but also more complex than he thought.

No less ambiguous is the concept of unity which also makes up a part of the traditional notion of cosmopolitanism. It plays an important role in Popper's argument against the enemies of the open society, and functions in his work in several senses. The first meaning of unity, which appears in expressions like "unity of tribal life", "mystical unity" and related ones, is criticized throughout *Open Society*. Popper censored Plato for an attempt to restore this tribal unity by presenting his "dream of unity and beauty and perfection, this aestheticism and holism and collectivism." He repudiates this meaning of unity as a "product as well as the symptom of the lost group spirit of tribalism" (Popper, 2013, 188). He also finds the idea of 'unbroken harmony and unity' in the

Christian philosophy of the middle ages (Popper, 2013, 241), as well as in Hegel (Popper, 2013, 258).

The second meaning of unity, which he approves of, plays an important role in his explanation of the idea of critical rationalism. As he claims, for example, “mankind is united by the fact that our different mother tongues, in so far as they are rational, can be translated into one another. It recognizes the unity of human reason” (Popper, 2013, 444). The critical rationalism he advocates is based on the famous Socratic dictum: ‘I may be wrong and you may be right, and by an effort we may get nearer to the truth.’ The adage explains Popper’s idea of the rational unity of mankind (Popper, 2013, 432), or “the unity of human reason” (Popper, 2013, 437). As such, it is opposed to

[i]rrationalism, which is not bound by any rules of consistency, may be combined with any kind of belief, including a belief in the brotherhood of man; but the fact that it may easily be combined with a very different belief, and especially the fact that it lends itself easily to the support of a romantic belief in the existence of an elect body, in the division of men into leaders and led, into natural masters and natural slaves, shows clearly that a moral decision is involved in the choice between it and a critical rationalism (Popper, 2013, 437).

There are thus two meanings of unity of particular importance to Popper. One of them may be called the unity of imposed dogma, while the other is the unity of negotiated compromise (Chmielewski, 2020, 21). The meaning of unity which Popper rejects is derivable from the concept of uniformity or sameness of elements united, whereas the meaning he approves of is based on the concept of diversity. However, it is difficult to see how Popper’s understanding of rationality may be conducive to unity in a communitarian sense. Metz’s analysis demonstrates that there are significant differences between ethics based on rationality and those based on solidarity. There are reasons to believe that critical rationalism, with a strong emphasis put by Popper on the critical part, may be seen as engendering more discordant attitudes rather than unifying ones.

Recognition for Postcolonial Peoples

According to Achille Mbembe “Africa is never seen as possessing things and attributes properly part of ‘human nature.’ Or, when it is, its things and attributes are generally of lesser value, little importance, and poor quality. It is this elementariness and primitiveness that makes Africa the world *par excellence* of all that is incomplete, mutilated, and unfinished, its history reduced to a series of setbacks of nature in its quest for humankind” (Mbembe, 2001, 1). The above captures also the Western perception of other postcolonial regions. Africa, along with the whole Global South, continues to be perceived patronizingly as a continent in need of assistance, development, and support from more developed nations, which implies that its peoples are incapable of achieving anything worthwhile on their own.

Popper’s belief in the superiority of the European civilisation exposes him to charges of exclusionary universalism. What is needed is a cosmopolitanism which would not be exposed to such criticisms and which would help to understand deeper both the history and the present political

problems between former colonies and the West. It seems that cosmopolitanism based not on a mere acknowledgement of differences between individuals and peoples, but on a firm acceptance of human diversity might be immune to the above critique (Draľus, 2020, 18-21). It seems that a theory of recognition based on the idea of diversity would enable one to acknowledge more persuasively the equal moral status of all humans, irrespective of their diverse traditions and skin colour. In particular, it would enable one to say that postcolonial countries deserve not only a more just share in the global distribution of material goods but also the recognition of the diversity of their identities, cultures, and their achievements. No less importantly, they deserve recognition for the evils done to their peoples by the Western world.

The postcolonial struggle for recognition will not be helped by attributing moral superiority to the West nor by viewing the process of recognition as taking place between master and slave, as Hegel did. As Fanon argued, no such relationship takes place between the colonist and the colonized: “There is not an open conflict between white and black. One day the White Master, *without conflict*, recognized the Negro slave” (Fanon, 1986, 217). The postcolonial struggle for recognition cannot be based upon the ambiguous concept of equality alone. The recognition of postcolonial peoples would not do justice to them if it were to be based on the concept of difference for it would be tantamount to reiterating the bipolar and essentialist opposition between the West and the East, the Western Other: “But the former slave wants to *make himself recognized*” (Fanon, 1986, 217, emphasis in original). The cosmopolitan theory of recognition based on the concept of diversity may help to acknowledge the extent to which the allegedly superior Western world has gravely sinned against colonised peoples by refusing to extend to them not only respect and esteem but the recognition of their very humanity. Successful coping with the condition of subalternity by them can be achieved through reclaiming their agency, both individual and collective. It would enable them to direct the course of their development according to their own understanding of their aspirations. A necessary precondition of the process of the emancipation of postcolonial peoples is their own ability to recognize themselves as capable of reclaiming their agency. To do so, they need to recognize themselves as worthy of recognition.

The Letter and the Spirit

It follows from the above that although Popper’s social and political philosophy helped to undermine the communist regimes in Central and Eastern Europe, it does not suggest equally effective measures to deal with the problems of the Global South. It does not mean, however, that the critical rationalist programme he initiated has expended itself already and cannot grow anymore. His programme in philosophy of science was developed in a variety of ways by his followers. Though not always to Popper’s liking, the conceptions he inspired have deepened and broadened our understanding of science. What they left unchallenged is his subversive idea that science is an unended quest rather than a search for final and uncontested truths. This insight applies in equal measure to philosophy in general, and *a fortiori* to Popper’s philosophy too. That is why I believe Popper’s programme of social and political philosophy could be expanded and developed

as his philosophy of science was, to cover areas he left uncharted. It would imply a redefinition and radicalization of some of the conceptual pillars of his approach. In fact, such work is already underway. It seems that what is needed at the present moment in history is a reinterpretation of Popper's rationalism so it becomes more sensitive to the contextuality and historicity of human thought. His radical individualism will have to be reread through a stronger acknowledgement of human associability and mutual dependence. His cosmopolitanism will have to appreciate to a greater extent human diversity. And, finally, his ideas will have to be supplemented by a theory of recognition which it thus far evidently lacks.

A further examination will have to show whether such a reinterpretation of critical rationalism is feasible. What would emerge from such a reinterpretation may not be strictly in line with the letter of Popper's philosophy. But it nevertheless might be a critical rationalism capable of addressing problems which Popper chose not to address, of which he was not aware, or could not be. It could and perhaps should be a critical rationalism capable of solving problems of society and politics, both known and unforeseen, in a spirit he instilled into philosophy.

References

- Acton H. B. & Watkins, J. W. N. (1963). Symposium: Negative Utilitarianism, *Proceedings of the Aristotelian Society*, Supplementary Volumes, Vol. 37, pp. 83-114.
- Afisi, O. T. (2016). Popper, Liberal-Communitarianism, Beyond the Politics of Liberalism, *Philosophia: E-Journal of Philosophy and Culture*. Vol. 11.
- Afisi, O. T. (2016). Towards Exploring an Enduring Liberal-Communitarianism in Karl Popper Through His Intellectual Biography. *Journal of Philosophy, Culture and Religion*, Vol. 24.
- Afisi, O. T. (2020). Re-echoing the Conservatism in Karl Popper's Piecemeal Engineering. *Studia Philosophica Wratislaviensia*, Vol. XV, Fasc. 1, 9-18.
- Afisi, O. T. (Ed.) (2022). *Karl Popper and Africa. Knowledge, Politics and Development*. Springer.
- Alexandravicius, P. (2019). Strategies of Perception of Europe and Their Reception in Lithuania. *Studia Philosophica Wratislaviensia*, Vol. XIV, Fasc. 1.
- Bessner, D. (2018). The George Soros philosophy – and its fatal flaw. *The Guardian*, July 6, <https://www.theguardian.com/news/2018/jul/06/the-george-soros-philosophy-and-its-fatal-flaw>.
- Chmielewski, A. (1999). The Future is Open: A Conversation with Sir Karl Popper. *Open Society After Fifty Years*, I. Jarvie & S. Pralong. Routledge.
- Chmielewski, A. (2020). *Politics and Recognition. Towards a New Political Aesthetics*. Routledge.
- Derksen, A. A. (1985). The Alleged Unity of Popper's Philosophy of Science: Falsifiability as Fake Cement. *Philosophical Studies: An International Journal for Philosophy in the Analytic Tradition*, 48(3), 313-336.
- Desai, G. (2001). *Subject to Colonialism. African Self-Fashioning and the Colonial Library*, Duke University Press.
- Draľus, D. (2020). The Reciprocal Cosmopolitanism, *Problemos*, No 97, pp. 8-23.
- Fanon, F. (1963). *Wretched of the Earth*, translated from the French by Richard Philcox with commentary by J. P. Sartre & H. K. Bhabha. Grove Press.
- Fanon, F. (1986). *Black Skin, White Masks*, Transl. Ch. L. Markmann. Pluto Press.
- Gellner, E. (1983). *Nations and Nationalism*. Blackwell.
- Gellner, E. (1997). *Nationalism*. Weidenfeld & Nicolson.
- Hacohen, M. H. (2000). *Karl Popper. The Formative Years 1902-1945. Politics and Philosophy in the Interwar Vienna*, Cambridge University Press.
- Hobbes, T. (1996 [1651]). *Leviathan or The Matter, Form, and Power of a Commonwealth Ecclesiastical and Civil*. Edited with an introduction by J. C. A. Gaskin. Oxford University Press.
- Husserl, E. (1970). *The Crisis of European Sciences and Transcendental Phenomenology*, Northwestern University Press.
- Kenaw, S. (2010). Psychoanalyzing Historicists? The Enigmatic Popper. *Journal for General Philosophy of Science/Zeitschrift für allgemeine Wissenschaftstheorie*, 41(2), 315-332.

- Kołakowski, L. (1990). *The Self-Poisoning of the Open Society*, in: *Modernity on Endless Trial*, The University of Chicago Press.
- Losurdo, D. (2014). *Liberalism: A Counter-History*. Translated by G. Elliott. Verso.
- MacIntyre, A. (1984). *After Virtue: A Study in Moral Theory*. Notre Dame University Press.
- Masolo, D. A. (1994). *African philosophy in search of identity*. Edinburgh University Press.
- Masolo, D. A. (2010). *Self and Community in a Changing World*. Indiana University Press.
- Mbembe, A. (2001). *On the Postcolony*. University of California Press.
- Metz, T. (2011). Two Conceptions of African Ethics. in *Quest: An African Journal of Philosophy*, XXV(1-2), 141-161.
- Metz, T. (2014). Ubuntu: The Good Life'. In: Michalos, Alex, ed. *Encyclopedia of Quality of Life and Well-Being Research*, pp. 6761–6765S, Springer.
- Metz, T. (2015). How the West Was One. The Western as Individualist, the African as Communitarian'. *Educational Philosophy and Theory*, Vol. 47, pp. 1175–1184.
- Metz, T. (2020). Popper's Politics and Law in the Light of African Values, *Jus Cogens*, Vol. 2, Springer.
- Mignolo, W. D. (2011). *The Darker Side of Western Modernity. Global Futures, Decolonial Options*, Duke University Press.
- Miller, D. (1997). Sir Karl Raimund Popper, *Biographical Memoirs of Fellows of the Royal Society, The Royal Society*, Vol. 43, pp. 369-409.
- Miller, D. (2012). Overcoming the Justificationist Addiction. *Studia Philosophica Wratislaviensia*. Supplementary Volume, pp. 93-103. <https://warwick.ac.uk/fac/soc/philosophy/people/miller/swpfinal.pdf>.
- Mudimbe, V. Y. (1988). *The Invention of Africa: Gnosis, Philosophy, and the Order of Knowledge*, Indiana University Press.
- Ogbonna, B. Ch. (2012). Structural Adjustment Program (SAP) in Nigeria: An Empirical Assessment. In *Proceedings from the 2nd Accounting and Finance Research Association International Conference*, No. 4-7, Enugu, Nigeria.
- Popper, K. (1986). *The Poverty of Historicism*, London. Ark-Routledge and Kegan Paul.
- Popper, K. (1989) *Conjectures and Refutations. The Growth of Scientific Knowledge*, Routledge.
- Popper, K. (1992). *Unended Quest. An Intellectual Autobiography*. Routledge.
- Popper, K. (1999). *All Life is Problem Solving*, transl. by P. Camiller. Routledge.
- Popper, K. (2013). *Open Society and its Enemies*, New One-Volume Edition. Princeton University Press.
- Ryan, A. (2013). Introduction. In Popper, Karl. (2013). *Open Society and its Enemies*, New One-Volume Edition. pp. ix-xxi. Princeton University Press.
- Sartre, J. P. (1963). Preface. In Frantz Fanon, *Wretched of the Earth*, translated from the French by R. Philcox with commentary by J. P. Sartre & H. K. Bhabha, Grove Press.
- Sassower, R. (2006). *Popper's Legacy. Rethinking Politics, Economics and Science*. Routledge.
- Sassower, R. (2017). *The quest for prosperity. Reframing political economy*. Rowman & Littlefield International.
- Satia, P. (2008). *Spies in Arabia. The Great War and the cultural foundations of Britain's covert empire in the Middle East*. Oxford University Press.
- Shaxson, N. (2007). *Poisoned Wells. The Dirty Politics of African Oil*. Palgrave.
- Shearmur, J. (1996). *The Political Thought of Karl Popper*. Routledge.
- Sen, A. (2006). *Equality of What? In Inequality Reexamined*, Oxford University Press.
- Soros, G. (1995). *Soros on Soros: Staying Ahead of the Curve*. John Wiley and Sons.
- Soros, G. (2010). *Lectures at Central European University*. Public Affairs.
- Sousa, S. B. D. (2006). *The Rise of the Global Left*. Zed Books.
- Táíwò Ó. (2004). Post-Independence African Political Philosophy. In *A Companion to African Philosophy*, edited by K. Wiredu & W. E. Abraham, A. Irele & I. A. Menkiti, pp. 304-312, Blackwell.
- Tarski, A. (1956). *Logic, Semantics, and Metamathematics*, transl. J. H. Woodger, Oxford University Press.
- Tutu, D. (1999). *No Future without Forgiveness*. Random House.
- Watkins, J. W. N. (1974). The Unity of Popper's Thought. In Schilpp, P. A. (Ed.), *The Philosophy of Karl Popper*, Open Court.
- Watkins, J. W. N. (1997). Karl Popper. Memoir, *The American Scholar*, pp. 205-219, Spring.
- Woleński, J. (1985). *Filozoficzna szkoła lwowsko-warszawska*, Warszawa.
- Woleński, J. (2019). Lvov-Warsaw School. In *Stanford Encyclopedia of Philosophy*, <https://plato.stanford.edu/entries/lvov-warsaw/>.

Applying Critical Rationalism to Liberal Capitalism

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ABSTRACT

Since Critical Rationalism is considered by some more of an attitude or mindset and by others a methodological approach to philosophical thinking and practical problem-solving, its application, or more accurately, its epistemological testing grounds, should be expected to be much more wide-ranging than they have been so far. With the exception of some published anthologies on Critical Rationalism and occasional nods to the legacy of Karl Popper's falsificationist methodology, relatively few applications of a critical rational approach to contemporary theoretical debates in the social sciences have been published. I wish here to critically challenge the (optimistic) Hegelian and by extension the neoliberal view of the progress of American capitalism by reframing it with the Marxian notion of expropriation as applied to enslavement on plantations. The logic of enslavement as a process by which brutal exploitation has been practiced for centuries offers a falsifying test case of the rationality of capitalism and its promise of individual freedom of choice. This essay is an explicit exercise in the potential power of a version of Popperian critical rationalism being applied to the intersection of modern liberalism and capitalism, exploring the imbrication of a critical and rational analysis.

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Preamble

Since Critical Rationalism is considered by some more of an attitude or mindset and by others a methodological approach to philosophical thinking and practical problem-solving, its application, or more accurately, its epistemological testing grounds, should be expected to be much more wide-ranging than they have been so far. With the exception of a published anthology here and there on Critical Rationalism¹ and the occasional nod to the legacy of Karl Popper's falsificationist methodology, relatively little energy has been devoted to applying a critical rational approach to contemporary theoretical debates in the social sciences². Recalling Marc Antony's speech, I come neither to bury Popper nor to praise him, for hero-worship is philosophically unbecoming. I therefore eschew a review of the literature that has explicitly embraced this philosophical approach to problem-solving within the Popperian edifice. Instead, I wish to critically challenge the (optimistic) Hegelian and by extension the neoliberal view of the progress of American capitalism by reframing it with the Marxian notion of expropriation as applied to enslaved blacks in Southern plantations. The logic of enslavement as a process by which brutal exploitation has been practiced for centuries offers a falsifying test case of the rationality of capitalism and its promise of individual freedom of choice. Why bring Karl Marx to a Popperian ball? For those who forget, critical engagement must be worthy of the honor bestowed on its object, as Popper exemplifies in his praise for Marx's "sincerity" and "honesty," while still considering him a "false prophet"³. One could argue that the critical respect Popper accords Marx is no different from the critical respect Marx accords Adam Smith and other classical political economists. This essay, then, is an explicit exercise in the potential power of a version of Popperian critical rationalism as applied to the intersection of modern liberalism and capitalism, exploring the imbrication of a critical and rational analysis. To be an irrational critic is tantamount to throwing the baby with the bathwater; to be an uncritical rationalist is to remain dogmatically blind.

I: The False Promises of Liberalism

The liberal tradition in its myriad iterations promised individual freedom from the oppression of others, may they be royals, government functionaries and agencies, or religious institutions. Promoters of the liberal spirit, at least in the United States, saw in the 20th century a tripartite constellation of historical phenomena that threatened the rise of liberalism since the 17th century: the Bolshevik Revolution and its ensuing Stalinist regime, the rise of fascism during and in between the two World Wars, and the evolution of a welfare state

1 The best one to date is Joseph Agassi and Ian C. Jarvie, eds. *Rationality: The Critical View*. Dordrecht: Martinus Nijhoff Publishers, 1987. In their Preface they say: "These two contributions of Popper—to the rational foundations of science and to the foundations of the critical rationalist outlook—have generated two lines of debate." For them, at the very least, "rationality as the dialectic of interrogation" and the choice to be "critical as much as possible" are juxtaposed in a way that admits that the choice "cannot itself be rationally justified without thereby being open to the charge of begging the question," itself a critical rational approach to the critical rational "outlook."

2 See, for example, Charlotte Sleight, "The Abuses of Popper," *Aeon* (2/16/21); available: <https://aeon.co/essays/how-popperian-falsification-enabled-the-rise-of-neoliberalism>; accessed: 10/27/22.

3 See specifically, Popper's wording at the beginning of Ch. 13 of *The Open Society and Its Enemies*, Vol. II: "There can be no doubt of the humanitarian impulse of Marxism ... Marx made an honest attempt to apply *rational methods* to the most urgent problems of social life ... A return to pre-Marxian social science is inconceivable. All modern writers are indebted to Marx, even if they do not know it... One cannot do justice to Marx without recognizing his sincerity... His sincerity in his search for truth and his intellectual honesty distinguish him, I believe, from many of his followers" (1962, 81-2; italics added).

with Social Security, Medicare, and other welfare safety nets. The threat of fascism in the early 20th century was the bedrock on which the vitriolic rhetoric of the Cold War rested on both sides of the Atlantic, a rhetoric that warned of the potential loss of individual rights and power (as obviously was the case in the USSR, China, Cuba, and other so-called Communist States) the legitimacy of which rests for Americans on the *Constitution* and for Europeans on the constitutional monarchy of the United Kingdom and the French *Rights of Man and the Citizen*.

In this first section, I plan to briefly survey four thinkers whose critical appreciation of the subversive danger of liberal demagoguery reminds us of its inevitable slide into the conservative fold and even white supremacy. However different from Popper's war effort in the *Open Society and Its Enemies* (1945), they examine the historical conditions under which individual liberty is promoted and communal solidarity is demoted (as perhaps a morally slippery slope toward collective decision-making processes, planned economy, and the sacrifice of the individual for the sake of the State). I should hasten to add that my reach to sources outside the Popperian enclave is intentional: I hope to extend Popper's critical rational outlook (as explicitly charted in Ch. 24 of the *Open Society*) and apply it to the specific case of liberal capitalism as conceived in the past decade or so without resorting to his own texts. Since some of this ground has been covered elsewhere (Sassower 2006), it seems to me that if the Popperian spirit of critical rationalism is to have a future, it should not be limited to exegesis of his works among disciples, but see its applicability cast more broadly and perhaps more problematically for more orthodox or timid Popperians. Though careful to carve a small but essential role for the State, critical rationalists of the mid and late-20th century insisted on the centrality of individual preferences and choices as much in their personal as in their economic and political domains¹. The political sphere soon became the guardian not against corporate greed (that disregarded exogenous costs to the environment, for example, or product safety) but instead for the expansion of producer, consumer, and citizen rights.

In his lectures in 1978-9, Michel Foucault was using the American turn to neoliberalism as a way of understanding how the political liberal ideal about the freedom of individuals in their personal and communal affairs became a rallying cry for applying the discourse of economic analysis to every facet of human life. Anticipating the seismic shift from and a reaction to the legislation of the New Deal after the Great Depression (a Keynesian framework for government intervention to stimulate the economy) by the Reagan Administration in the 1980s to a less intrusive State and a logic of productivity, efficiency, and unbounded growth, Foucault's prescient lectures not only foresaw the economizing of everything but also the ensuing commodification of humans as "human capital" worthy of investment (in the form of education and certification) and monetized in the workplace in terms of ROIs (return on investment), thinking along the Chicago School about voting with wallets (choosing how to spend one's money and who to support for office)² rather than only at the ballot box (and reminiscent of Marx's original insights about what commodities represented³). In a sense, the second part of the 20th century is so infused with and relies on

1 See both of Austrian School pillars, Friedrich Hayek (1944), *The Road to Serfdom*. London: Routledge; and Ludwig von Mises (1979), *Economic Policy: Thoughts for Today and Tomorrow*. London: Regnery/Gateway.

2 See in this context, Milton Friedman (1980), *Free to Choose*. Chicago: University of Chicago Press.

3 See, for example, chapter 1 of *Capital*, where Marx says: "But the value of a commodity represents human labour in the abstract, the expenditure of human labour in general" (1867: 32), referring to the abstraction associated with human labor-power. He continues: "A commodity appears, at first sight, a very trivial thing, and easily understood. Its analysis shows that it is, in reality, a *very queer thing*, abounding in *metaphysical subtleties and theological*

the logic of the marketplace that whatever the problem, its solutions are furnished almost exclusively in financial terms¹.

As far as Foucault is concerned, the neoliberal turn is no historical anachronism reverting nostalgically back to Adam Smith's imagined Scottish village, a place where the State sets aside a sphere of operation large enough for markets to thrive. Instead, the State becomes itself a marketplace, where policy decisions follow the logic of late capitalism and where this logic expunges the political foundations that preserved and protected the dignity and rights of citizens². The focus on the individual turns into a focus on an enterprising individual, and inter alia on enterprising units. In Foucault's words: "An economy made up of enterprise-units, a society made up of enterprise-units, is at once the principle of decipherment linked to liberalism and its programming for the rationalization of a society and an economy" (2008: 225). At stake is a way of thinking about organizing the State and not only its marketplace, thinking about people in what he terms "biopolitics," which is an attempt to "rationalize the problems posed to governmental practice by phenomena characteristic of a set of living beings forming a population, health, hygiene, birthrate, life expectancy, race..." (2008: 317). Without going into further details, it becomes clear from Foucault's analysis that in the name of the promised liberal spirit of individual freedom from the burdens of the State, individuals have been turned into dehumanized units of economic calibration under constant surveillance.

Following critically in Foucault's footsteps, Wendy Brown laments the neoliberal "stealth revolution" and its concomitant danger to the democratic ideals that include liberty, equality, and solidarity. In her words, "neoliberal rationality's ascendance imperils the ideal, imaginary, and political project of democracy" because of its infiltration into all domains of human interactions and undermines any sense of solidarity. More specifically, she continues, there are "concrete policies that dismantle social infrastructure, privatize public goods, deregulate commerce, destroy social solidarities, and responsabilize subjects" (2015: 201). This last phrase, "responsibilize subjects" in the active sense takes on extra meaning in the biopolitical neoliberal order insofar as responsibility is thrust onto the individual level where people should be taking care of their health and wellbeing and ensuring they are productive members of society. Given their free choices, it is up to them to beware of the hazards strewn about by corporate negligence and greed. The deregulated marketplace shifts the responsibility from corporations to individuals, while the State is expected to provide free access to its infrastructure and minimize its oversight responsibility (upending the liberal faith espoused since the Enlightenment). In the name of "neutrality," argues Brown, "liberal democratic ideals of personhood, freedom, and equality appear universal while being saturated with norms of bourgeois white male heterosexual familialism. This is but one reason why the historically excluded, long

niceties. So far as it is a value in use, there is nothing *mysterious* about it, whether we consider it from the point of view that by its properties it is capable of satisfying human wants, or from the point that those properties are the product of human labour" (1867: 47; italics added). Marx's realization that a commodity is never just a commodity illustrates what a century later becomes a standard economic thinking suffused with financial vocabulary that rests on a fetishized logic of exchange (transactional) relationships.

1 See Richard B. Norgaard "Economism and the Econocene: a coevolutionary interpretation," *Real World Economics* Issue no. 87, 2019, pp. 164-183.

2 Here is Foucault's language: "the problem of neo-liberalism was not how to cut out or contrive a free space of the market within an already given political society, as in the liberalism of Adam Smith... The problem of neo-liberalism is rather how the overall exercise of political power can be modeled on the principles of a market economy. So it is not a question of freeing an empty space, but of taking the formal principles of a market economy and referring and relating them to, of projecting them on to a general art of government" (2008, 131).

after political enfranchisement, have yet to achieve substantive equality and belonging” (2015: 205). The kind of bourgeois abstraction in the name of universality claimed by European Enlightenment promoters erased and encased, as Marx already understood: individual laborers were seen through the prism of their labor power while the “individual” was racialized and gendered¹. This contentious point has been lingering for over a century, recognized only on the intellectual and academic margins when democratic institutions, as has been the case in the United States since the 2016 presidential election, have been undermined.

The economization of the political sphere under the banner of “neoliberal political rationality” runs the risk of “vanquishing of *homo politicus* by *homo oeconomicus*,” that is, “eliminat[ing] the very idea of the *demos*” (2015: 207). The problem is no longer the evisceration of the political sphere and the ideals by which it is meant to be governed, according to Brown, but an insistence on changing the way liberal democracy is conceptualized and administered². What is at stake is the loss of the ideals of democracy once “market values become the only values” to be considered worthy of political protection and promotion or when “liberal democracy is fully transformed into market democracy” (2015: 208). One need only recall the devastating consequences of the US Supreme Court’s ruling in *Citizens United v Federal Election Commission* (2010)³ which replaced the common understanding of the Greek notion of the *demos* as “ordinary citizens, common people from a district, in a city-state” with a notion of individual freedom of speech rights granted to multi-billion dollar corporate entities whose financial support for candidates and ballot issues easily tips the balance disproportionately in their favor. In its turn, the so-called protection of individual rights in elections as the bellwether of democracy has been subverted so that any sense of equality (one person, one vote) is relinquished. In the name of a principled judicial decision posturing as respect for an expansive individual rights, a travesty of electoral fairness is being perpetrated on an already underrepresented and racially segregated portion of the population that is expected to respect the same constitution.

Though the demise of the liberal spirit in American politics has become more visible in the 21st century with the concomitant increase of wealth and income inequality, its entanglement with capitalism dates back to the 17th century. As Domenico Losurdo argues, however much Holland, Britain, and the United States “claimed to be beacons of democracy and the liberal spirit,” they simultaneously had a “tenacious attachment to the institution of slavery” (2014: 16ff). Whether the antecedents of enslavement on both sides of the Atlantic were modeled on the “systematic expropriation and practical genocide first of the Irish and then of the Indians” or on ancient enslavement practices (2014: 20), the colonial-settler feature of modern capitalism drew intellectual support from the European philosophers and thinkers, such as John Locke. More

1 See, for example, Tyler Stovall (2021), *White Freedom: The Racial History of an Idea*. Princeton: Princeton University Press.

2 In Brown’s words: “Economization replaces a political lexicon with a market lexicon. Governance replaces a political lexicon with a management lexicon. The combination transforms the democratic promise of shared rule into the promise of enterprise and portfolio management at the individual and collective level. In place of citizens sharing and contesting power, the resulting order emphasizes, at best, consensus achieved through stakeholder consultation, focus groups, best practices, and teamwork. The unruliness of democracy is stifled by a form of governing that is soft and total” (2015, 208).

3 On January 21, 2010, the Supreme Court issued a ruling in *Citizens United v. Federal Election Commission* overruling an earlier decision, [Austin v. Michigan State Chamber of Commerce](#) that restricted funding by corporations. The Court also overruled the part of [McConnell v. Federal Election Commission](#) that disallowed corporations from making electioneering communications.

specifically, Locke's inspiration for the nascent American democratic experiment is at odds with his "having an interest in the slave trade as shareholder in the Royal African Company" and his concern for "the white colonists' expansionist march as secretary (in 1673-74) of the Council of Trade and Plantations" (2014: 24). In Losurdo's "counter-history," liberalism and racial slavery came into existence and thrived simultaneously. The blatant hypocrisy, if not outright contradiction, between liberalism defined as "every individual's equal enjoyment of a private sphere of liberty guaranteed by law" (2014: 95) with an attendant non-compromising rejection of any central authority (monarchy in Europe and the Empire or Federal government after the revolution) and insistence on self-governance¹ (2014: 141) and racial enslavement as part of capitalist global expansion can only be explained by the fact that the liberal spirit, however universalized, remained applicable to white people only, expanding from property owners to all white citizens and excluding blacks and slaves in the process (2014: 144ff). If liberty can be applied only to mature human beings and if blacks are considered immature or "barbarians," then of course their freedom is not what is at stake for liberalism in either Europe or the Americas (2014: 225).

The universalization of liberalism and democracy was limited to European whites at home and in their colonies and therefore might be more accurately labeled "*Herrenvolk* democracy," a master-race democracy, one that undermines the ideal of liberalism broadly construed (2014: 107, 320-1). The American colonies not only failed to adhere to the spirit of liberalism, but established in its stead what Charles Mills calls "racial liberalism." For Mills, the failure of liberalism in modernity was not its "abstraction as such" or the appeal to idealized universal standards (already seen in Hegel and criticized by Marx), but a very specific "problematic mode of idealizing abstraction" that in its process of abstracting "abstracts away from social oppression, and in that way, both conceals its extent and inhibits the development of the conceptual tools necessary for understanding and dealing with its workings" (2017: xv). This kind of intentional abstracting avoids dealing with the "hard facts of class, gender, and racial oppression" (2017: xviii). It would be one thing to simply avoid or ignore such "hard facts," but when this deliberate ignorance serves as the foundation or "actual architecture" of the so-called "liberal state," it in fact sanctions "the wrongful transfer of wealth and opportunities from people of color to whites" (2017: xix). In short, the credibility of the liberal spirit falls apart when its real-world political manifestations endorse extractive modes of capitalist production. Was the entanglement of liberalism with capitalism and the accompanying entanglement of capitalism with slavery coincidental or much more essential than apologists for liberalism are willing to admit? One neoliberal retort (relying on Adam Smith's comments about slavery in his *An Inquiry into the Nature and Cause of the Wealth of Nations*, 1776, Book I, Ch. 8) suggests that enslavement is more costly than wage-labor because of the costs associated with "the wear and tear of a slave," but this thesis has been falsified by Edward Baptist's research, as seen below.

II: The Scandalous Necessity of Slavery for Capitalism

Unlike earlier forms of slavery already established in the ancient world, where enslavement's temporality related to debts or conquest, the American variant of hereditary Chattel Slavery decreed that slaves were

1 Losurdo also argues in this context that "in both Bismarck and Marx we witness a distinction between a liberalism inclined to consecrate the self-government of a civil society hegemonized by the feudal aristocracy or grand bourgeoisie, and a liberalism ready to intervene in the relations of domination and oppression that manifest themselves within civil society itself" (2014, 281).

owned by their masters as personal property with rights of ownership extending to their progeny¹. It remains unclear if slavery in general and Chattel Slavery in particular provide the sufficient conditions for the success of capitalism, however irrational this thesis may appear at first. Even if slavery is necessary but not sufficient for the development of capitalism, it is definitely sufficient for the indictment of an economic system that claims as its rational core equality and liberty within the fertile political ground of democracy. One answer to the question about the necessity of slavery for the establishment, development, and success of capitalism appears already in Marx's *Capital* (Vol. I: 1867), another in Eric Williams' *Capitalism and Slavery* (1944), and a third in Edward Baptist's *The Half Has Never Been Told* (2014). Though different in their respective analysis, these authors indict not only the American machination of capitalism since the inception of the American republic, but also falsify the lofty pretensions with which classical 18th century market capitalism was promoted as the true expression of the ideals of liberalism. Contemporary attempts by neoliberal ideologists to justify wealth and income inequality, as Thomas Piketty's *Capital and Ideology* (2020) illustrates, fall short of critically questioning whether hereditary chattel slavery was a necessary and/or sufficient condition for the success of the American variant of capitalism. Instead, they debate the extent to which chattel slavery's functional features do or do not resemble a capitalist mode of production (surplus extraction, dominance in social relations, and the commodification of laborers).

In *The Poverty of Philosophy*, the response to Proudhon's *Philosophy of Poverty*, Marx seems to mock how a dialectical treatment of slavery (in the hands of Proudhon) would be treated. It would need, so it seems, to have a "good side" and a "bad side," "advantages" and "drawbacks," "contradictions" which are at the center of any economic category. He continues: "The problem to be solved: to keep the good side, while eliminating the bad." What does this even mean to say that slavery has a "good side": good for whom? And how is it possible to "eliminate" the "bad" if the very elimination would eliminate the category altogether, namely, abolish slavery? Marx pivots to make an "argument" or outlines a way of thinking that would, if one were to take it seriously at all, appear as supporting the "good side" of slavery. In Marx's famous words, slavery in North America "is just as much the pivot of bourgeois industry as machinery, credits, etc. Without slavery you have no cotton; without cotton you have no modern industry. It is slavery that gave the colonies their value; it is the colonies that created world trade, and it is world trade that is the precondition of large-scale industry. Thus slavery is an economic category of the greatest importance" (1955/1847: 49-50).

Does "greatest importance" equate to necessary condition? Maybe not sufficient, but definitely necessary condition as the line of reasoning unfolds: slavery is necessary for cotton production, and cotton is necessary for "modern industry" (unspecified if in America or the UK). From cotton, Marx shifts to the "colonies," whose accumulated wealth ("value") "created" world trade, not simply contributed to it, and it is this world trade that was the "precondition" [*la condition*] of "large scale industry."² He pauses from his grand

1 The doctrine of *Partus Sequitur Ventrem*, decided in 1662, stated that the child's fate as a slave or free person depended on the status of the mother; see Jennifer Morgan (2021), *Reckoning with Slavery: Gender, Kinship, and Capitalism in the Early Black Atlantic*. Duke University Press, pp. 3-4.

2 The English translation turns the French "*la condition*" into "precondition," which is commonly understood to be of stronger causal relation, what in French would be "*condition préalable*." The English translation by the Institute of Marxism-Leninism tipped its hand in 1955 (because of Cold War rhetoric?) on the side of slavery being a necessary precondition for the thriving capitalism of the West, primarily in Europe.

(historical materialist) argument to say something about America itself: “Without slavery, North America, the most progressive of countries, would be transformed into a patriarchal country.” And then he contextualizes America in the world (primarily nodding to Europe): “Wipe North America off the map of the world, and you will have anarchy – the complete decay of modern commerce and civilization. Cause slavery to disappear and you will have wiped America off the map of nations.” It’s one thing to say that without slavery and the accumulated wealth it brought to the colonies America would disappear from the “map of nations,” and quite another to suggest that America’s disappearance would bring about (cause?) the “complete decay of modern commerce and civilization.” The second claim puts the centrality of America’s slavery (as an economic category) not simply as a condition of the “greatest importance,” but, as an economic category without which European “large scale industry,” that is European capitalism, comes to a halt (“complete decay”).¹ Before continuing with Marx’s analysis, perhaps a quick critical note is in place here about another text that uses “poverty” in its title, Popper’s *The Poverty of Historicism* (1957). Without detailing its various arguments, suffice here to insert two relevant comments: first, the dialectical Marxian movement that displaces Proudhon’s remains just as problematic for Popper as any historicist (read determinist or predictive) attempt to comprehend history; and second, Popper’s preference for “social piecemeal engineering” over any revolutionary pretense (1957: 64) remains a point of departure from any historicist meta-narrative. From the abovementioned critical (and rational) analysis Marx offers in regards to slavery in America, it appears reasonable to find points of overlap rather than contradiction between the Marxian and Popperian approaches to crucial features that enhanced the historical development of modern capitalism.

Back to Marx. It is also clear that the commodification of labor power is a distinctive capitalist method of exploitation, one that transcends ancient modes of production and exchange. The significance of the equalizing power of labor under capitalism because of the commodification of labor-power (1976/1867, Vol. I: 152) stands against the inherent inequality of slave labor in comparison to other kinds of labor in pre-capitalist societies. Similarly, Marx explains that pre-capitalist societies, both ancient and “modern colonies” (presumably including the North American ones) rest on “direct relations of domination and servitude, in most cases on slavery,” and they differ from capitalism which “presupposes from the outset the free wage-labourer who sells his labour-power to capital.” (1976/1867, Vol. I: 452) This difference is crucial in not conflating or reducing the so-called free wage-labor to slavery. In this rendering, slavery remains outside the capitalist orbit as a distinctive form of exploitation and dehumanization, and therefore to claim it necessary for capitalist production or success is false.²

1 Though Marx turns his ire onto Proudhon himself (“Let us for a moment consider M. Proudhon himself as a category. Let us examine his good and bad side, his advantages and his drawbacks” (Ibid.)), it becomes clear from these comments that Marx finds slavery of the greatest importance, perhaps even a precondition for the development of large-scale industry. The condescending language in these passages are applied to Proudhon’s appropriation of the dialectic method to political economy’s “categories,” setting them up as if their analysis could conceal the barbarity of slavery, and also to the obvious role slavery plays in furthering capitalism as the systemic mode of human exploitation.

2 This does not mean that Marx’s own words cannot lead to a confusion about the relationship between slavery and capitalist production. For example, when quoting Engels, Marx’s language can be easily construed as equating two different modes of production: “The slavery in which the bourgeoisie holds the proletariat chained is nowhere more conspicuous than in the factory system. Here ends all freedom in law and in fact.” (Ibid. 550, note#9) The factory worker, like the slave, loses freedom, regardless of the capitalist claim that wage laborers are voluntarily engaged in their work and that their wages are fair in the Smithian sense of the natural (and perhaps moral) value that

Ever mindful of Smith and other classical economists, even when they argue against slavery (from an exclusively economic perspective, not a moral one), Marx is clear about the difference between slave labor and wage labor. This distinction is not of degrees of exploitation but of kind. In his words: “In slave labour, even the part of the working day in which the slave is only replacing the value of his own means of subsistence, in which he therefore actually works for himself alone, appears as labour for his master. All his labour appears as unpaid labour.” Wage labor in modern capitalism by contrast is designed so that “even surplus labour, or unpaid labour, appears as paid.” This means that “*In the one case, the property-relation conceals the slave’s labour for himself; in the other case the money-relation conceals the uncompensated labour of the wage-labourer*” (1976/1867, Vol. I: 680; italics added). Not only is there a difference in the kind of social relations in which they engage (slave as property, laborer as free worker), but the very calculus of extraction of labor power differs in kind, as Marx spells out. And this differentiation heralds a deviation from or even a contradictory moment to the thesis about the essential role slavery plays in the development of capitalism.

Unlike these earlier textual cases where slavery is set apart from the capitalist mode of production, the question of the necessity of slavery for capitalist progress becomes more complex and entangled at the end of *Capital* Volume I, when Marx discusses “primitive accumulation.” Finding a parallel between religion and political economy, Marx explains that “primitive accumulation [*Ursprungliche Accumulation*] plays approximately the same role in political economy as original sin does in theology.” (1976/1867, Vol. I: 873) The role, it seems, is being the symbolic anchor that ties so many loose ends and strands of apologist justifications about the state of affairs in which humanity finds itself. Original sin not only helps explain a range of theological themes, from the problem of evil and the human condition on earth to redemption and salvation in the afterlife, it also sets in motion a conceptual hierarchical relation between humans and God, between the sacred and the profane. The high priests of political economy model their conceptual apparatus on the original sin invented by their theological predecessors. Primitive accumulation presumes the same imaginary fountain from which judgments camouflaged as empirical facts culled from the historical record flow. How else would apologists of the status quo explain the disparity between rich and poor, between capitalists and workers? The naturalizing move is similar in religion and political economy: an imaginary starting point is peppered with anecdotal evidence and turned into a “natural” state of affairs (reality) devoid of human agency or culpability.

Marx recounts the original sin of primitive accumulation as the “diligent, intelligent and above all frugal elite” accumulated wealth, while “lazy rascals” who were “spending their substance, and more, in riotous living” ended up having “nothing to sell but their own skins” (1976/1867, Vol. I: 873). The visceral image of the poor selling their “skins” [*Haut*], points to the embodied facet of wealth accumulation as well as to its violence (with distinctive allusion to the way slaves were treated during this time in the American plantations). “In actual history,” continues Marx, “it is a notorious fact that conquest, enslavement, robbery, murder, in short, force [*Gewalt*], play the greatest part.” (1976/1867, Vol. I: 874) The German *Gewalt* means violence and power, so that the facticity of the original sinful accumulation of wealth presents itself violently to those who were conquered and enslaved, robbed and murdered, and not as the result of hard work and frugality. Power relations of settler-colonial Europeans, in this historically informed conceptual recounting,

emerges when supply meets demand in the marketplace. The strong condemnation and outrage over the treatment of wage laborers may be less about equating two forms of labor-power than about tapping into a widespread recognition of the moral depravity of white enslavers as a way of condemning all capitalists.

turn into “capital-relation,” which is a “process” by which producers, “free workers” [*vogelfreie*], free like birds, go through a divorce [*Scheidungsprozess*] from their means of production (1976/1867, Vol. I: 875). This process is defined as “expropriation” wherein producers are dispossessed from their land and ground [*Grund und Boden*], namely, from ancestral sites that grounded them and their labor to a place they could call their own home even when not legally owned in feudal settings. The history of expropriation, continues Marx, “is written in the annals of mankind in letters of blood and fire” (1976/1867, Vol. I: 875).

Without chronicling the historical shift from European feudalism to capitalism here, it is safe to say that Marx’s historical arc includes many details of the “forcible expropriation of the people” (1976/1867, Vol. I: 881), where the State became an active accomplice in divorcing poor people from their land¹. The terror of the “divorce process” presented itself in idyllic terms, covering the pain and suffering associated with expropriation, as if it were a voluntary process. Perhaps *divorce* is too appealing a term today, when we think of two consenting adults separating by mutual consent and being freed from the burden of the marriage institution in general and the particular circumstances of their failed relationship. The “divorce process” Marx describes echoes the legal system that routinely gave a preferential treatment to men who left their wives like the so-called “‘free’ and outlawed proletariat” to fend for themselves. Does the process of expropriation demonstrate that indeed the separation of the worker from the means of production can happen only under conditions of capitalist enslavement? Historical records offer ample evidence for a variety of methods of expropriation that contribute to the circumstances under which the transformation of labor into commodified labor-power is accomplished, especially when imperialist military forces were enlisted.²

Crediting E. G. Wakefield with discovering not “something new *about* the colonies, but, *in* the colonies, the truth about capitalist relations in the mother country,” Marx explains that capital is not a “thing” [*Sache*], but “a social relation between persons which is mediated through things” (1976/1867, Vol. I: 932). When applied to the colonies, it becomes even more blatant that so long as “the worker can accumulate for himself—and this he can do so long as he remains in possession of his mean of production—capitalist accumulation and the capitalist mode of production are impossible [*unmöglich*]” (1976/1867, Vol. I: 933). And attributing the conceptual understanding of the shift in social relations within colonial systems to Wakefield, Marx concludes that slavery [*Sklaverei*] is “the sole basis of colonial wealth,” the wealth that

1 Marx summarizes the various historical moments in the following way: “The spoliation of the church’s property, the fraudulent alienation of the State domains, the robbery of the common lands, the usurpation of feudal and clan property, and its transformation into modern private property under circumstances of *reckless terrorism* [*rücksichtslosem Terrorismus*], were just so many *idyllic methods* of primitive accumulation. They conquered the field for capitalistic agriculture, made the soil part and parcel of capital, and created for the town industries the *necessary supply of a ‘free’ and outlawed proletariat*” (Ibid. 895; italics added).

2 An oft-quoted passage in *Capital* compares English work conditions to those in America in the following way: “While the cotton industry introduced child-slavery into England, in the United States it gave the impulse for the transformation of the earlier, more or less patriarchal slavery into a system of commercial exploitation. In fact, the veiled [*verhüllte*] slavery of the wage-labourer in Europe needed the unqualified slavery of the New World as its pedestal.” (Ibid. 925) Though the unveiling of the American pedestal in the New World exposed the horrific conditions of “child-slavery,” it was not the case of equivalence or causal connection. As much as American slavery reminded observers of the English exploitation of wage-labor (and vice versa), there is no indication of either causality or correlation between the two modes of human extraction. Instead, one set of labor relations is seen in the other, unveiled and exposed. There is a radical difference in the understanding of enslaved mothers and their progeny as property in the American context and child labor practiced in England and elsewhere. In relation to imperialist military force bringing about capital accumulation, see Rosa Luxemburg (1951), *The Accumulation of Capital*. Translated by Agnes Schwarzschild. London: Routledge and Kegan Paul Ltd.

feeds “motherland” England and its industrial-capitalist progress (1976/1867, Vol. I: 934). This recognition sounds as close to an argument that American slavery is a necessary if not a sufficient condition for the prosperity of European capitalism, but in what sense of “necessary”? At least in the sense of “divorcing” people from their means production, as was done with kidnapping, buying, and transporting enslaved Africans across the Atlantic. This expropriation enhances “primitive accumulation,” but not necessarily capitalist modes of production. Yet without primitive accumulation, there is no starting point for capitalism and in this sense, and therefore, expropriation is indeed a necessary condition for capitalism; but is this the same as arguing that slavery is a necessary condition for capitalism?

Marx is explicit, as he ends the first volume of *Capital*, that he is less concerned with the colonies and much more with the “secret” [*Geheimniss*] that is “discovered” in the “New World by the Political Economy of the Old World, and loudly proclaimed by it.” The “secret” is that “the capitalist mode of production and accumulation, and therefore capitalist private property as well, have for their fundamental condition [*voraussetzt*] the annihilation of that private property which rests on the labour of the individual himself; in other words, the expropriation of the worker” (1976/1867, Vol. I: 940). The “fundamental condition” or the presupposition on which capitalism rests is the expropriation of the worker from the land, a separation that defines new economic relations. It may not have been enslavement as such that was necessary for capitalism to flourish, but enslavement illustrated the kind of State legal sanction needed for the separation of workers from the land on which they traditionally labored. Moreover, as Kevin Anderson, for example, argues, “the linkages between capitalism and slavery permeated the whole of Marx’s [writings](#),” and that Marx “did not view the large-scale enslavement of Africans by Europeans, which began in the early sixteenth century in the Caribbean, as a repeat of Roman or Arab slavery, but as something new” (2019). To say that slavery is “an economic category” and not only a social and legal one sets the stage for saying that it is of the “greatest importance.” But being of the greatest importance by itself does not entail that it is essential or critical for the very framework of capitalist production, as mentioned above. The question remains, is slavery a necessary and sufficient condition for capitalism in general or at least for American capitalism, and how can one make the case for it.¹ Rebuffing critiques of orthodox Marxism as not dealing sufficiently with the importance of slavery to capitalism, some neo-Marxists have suggested that if one looks carefully enough, one can find in Marx’s texts “a unique understanding of slaveowner capitalism as a variant of capitalism and colonialism,” one where on the backs of slaves in American plantations surplus value is produced (Foster et al 2020). In this sense, plantation slavery was the necessary condition of capitalism, perhaps even a type of capitalism, one controlled by capitalists who already appreciated the abstraction of labor into extractable labor power. The capitalist logic of extraction and the accumulation of surpluses is exposed in the plantations in nascent but clearly articulated forms of institutionalized alienation and exploitation. For example, in Volume III of *Capital*, Marx clearly states that “The entire surplus-labour of the labourers, which is manifested [in slave economy] in the surplus-product, is extracted from [slaves] directly by the owner of all instruments of production, to which belong the land and, under the original form of slavery, the immediate producers themselves” (1996/1894: 583).

Eric Williams opens his *Capitalism and Slavery*, with the clarification that his study is not concerned with the development of American capitalism or the “study of the institution of slavery,” but instead about “the contribution of slavery to the development of British capitalism” and more specifically, the financing of the

1 For a brilliant summary of the debates over the capitalist nature of slave plantations and the capitalist nature of slave labor, see John Clegg (2020), “A Theory of Capitalist Slavery,” *Journal of Historical Sociology* 33(1), 74-98.

(European) Industrial Revolution (1944: viii). Williams argues that American slavery contributed more to the British than to the American development of modern capitalism, and as such American slavery could be seen as not a necessary condition for American capitalism which was different from its British counterpart (a point contested by Baptist, as we'll see below). This would also follow some of what we saw earlier in Marx's *Capital*. As much as Marx differentiated ancient slavery from its modern variants, Williams sees slavery as "an economic institution of the first importance" insofar as it had been "the basis of Greek economy and had built up the Roman Empire." He continues: "In modern times it provided the sugar for the tea and the coffee cups of the Western world. It produced the cotton to serve as a base for modern capitalism" (1944: 5). Tea and sugar appear secondary luxuries as compared with American cotton that transformed global trade and financial fortunes, and thus it appears that Williams assumes here that "modern capitalism" covers both the American and British variants.

Williams recounts the three stages of labor relations in the American colonies, with the "Indian" as a first, the white British criminals as second, and lastly enslaved Africans. In his words: "Here, then, is the origin of Negro slavery. The reason was economic, not racial; it had to do not with the color of the laborer, but the cheapness of the labor. As compared with Indian and white labor, Negro slavery was eminently superior" (1944: 19). Emphasizing the economic considerations that motivated the slave trade to the Americas, he insists, "Negro labor" was both the "cheapest and best" (1944: 20). The kinds of crops grown in the colonies could thrive, according to Williams, only because of what we call nowadays economies of scale: "Sugar, tobacco, and cotton required the large plantation and hordes of cheap labor, and the small farm of the ex-indentured white servant could not possibly survive" (1944: 23). The number of slaves in the American colonies increased from 5% of the total population in 1670 to 25% by 1730 (1944: 26). Reminiscent of Marx's phrase a century earlier that the history of expropriation "is written in the annals of mankind in letters of blood and fire," Williams' words are just as powerful: "Negro slavery blackened that structure all over the Caribbean while the blood of the Negro slaves reddened the Atlantic and both its shores. Strange that an article like sugar, so sweet and necessary to human existence, should have occasioned such crimes and bloodshed!" (1944: 27).

Williams comes closer to answering the question about the necessity of American slavery for British (and indirectly American) capitalism when explaining the "triangular trade" wherein England, France, and the American colonies supplied the "exports and ships," Africa the "human merchandise," and the plantations the "raw materials," so as to give the British industry a "triple stimulus." In short, "The profits obtained provided one of the main streams of that accumulation of capital in England which financed the Industrial Revolution" (1944: 51-2). Admittedly, Williams says *one* "of the main streams" of capital accumulation and not the *crucial element* in that accumulation, but as he continues to explain later, the amount of profit was so great that it ensured the success of both the Agricultural and the Industrial Revolutions and British capitalism, because technological developments were and continue to be capital intensive. His conclusion:

Britain was accumulating great wealth from the triangular trade. The increase of consumption goods called forth by that trade inevitably drew in its train the development of the productive power of the country. This industrial expansion required finance. What man in the first three-quarters of the eighteenth century was better able to afford the ready capital than a West Indian sugar planter or a Liverpool slave trader? We have already noticed the readiness with which absentee planters purchased land in England,

where they were able to use their wealth to finance the great developments associated with the Agricultural Revolution. We must now trace the investment of profits from the triangular trade in British industry, where they supplied part of the huge outlay for the construction of the vast plants to meet the needs of the new productive process and the new markets (1944: 98).

The involvement of British capitalism with the slave trade and the wealth it produced both in the West Indies and the American colonies ranged from banking and heavy industry to insurance, where “Lloyd’s, like other insurance companies, insured slaves and slave ships, and was vitally interested in legal decisions as to what constituted ‘natural death’ and ‘perils of the sea’” (1944: 104)¹.

It would seem, then, that slavery in the New World was definitely a necessary and perhaps even the sufficient condition for the development of British capitalism. Williams quotes an explicit expression of this sentiment by the British Prime Minister, Lord North, who complimented in 1783 “the Quaker opponents of the slave trade on their humanity, but regretted that its abolition was an impossibility, as the trade had become necessary to almost every nation in Europe” (1944: 126). The language of necessity is intertwined with the “impossibility” of abolition. One objection about an equivalence between the role of slavery in developing American versus British capitalism is that slavery in the American (and West Indies) colonies could be seen to be itself proto-capitalist. For Williams, though, the colonial system was the spinal cord of commercial capitalism during the mercantile epoch. In the era of free trade, industrial capitalists claimed not to want colonies at all, least of all the West Indies ones (1944: 142). Yet (free trade) commercial capitalism only feigned interest in the abolition of slavery, reminds us Williams. It continued to enjoy the fruits of slavery regardless of the formal abolition of the slave trade in 1807 and slavery in 1833 (1944: 136); despite the faith in the enlightened and liberating powers of commerce, the slave trade had actually increased during that period (1944: 173). His compounded conclusion starts with “commercial capitalism of the eighteenth century developed the wealth of Europe by means of slavery and monopoly” and continues with arguing that “in so doing,” commercial capitalism “helped to create the industrial capitalism of the nineteenth century.” Once industrial capitalism takes hold, it “turned round and destroyed the power of commercial capitalism, slavery, and all its works.” The replacement of commercial with industrial capitalism veils the role the former played in bringing about the latter. In Williams’ words: “Without a grasp of these economic changes the history of the period is meaningless” (1944: 210). More than Marx a century earlier, Williams can be understood as answering in the affirmative that slavery (and monopoly) were essential for the development and eventual success of British and indirectly American industrial capitalism, given the triangle of the slave trade.

Both abolitionists and proslavery writers, according to Edward Baptist, agreed that slavery was a “flawed economic system that was inherently less efficient than the free-labor capitalism that was developing in the North,” even “inherently unprofitable” (2014: xvi). With this in mind, many historians of the period presupposed that “slavery was not implicated in the US growth, success, power, and wealth” (2014: xix). Against this background, Baptist claims, with a great deal of empirical evidence that enslaved African-American were forced to “pick cotton faster and more efficiently than free people.” This greater productivity, “transformed the southern states into the dominant force in the global cotton market.” Cotton

1 See also the extensive study of insuring slaves in the colonies and “renting” rather than selling them for financial and legal reasons by Michael Ralph (2015), *Forensics of Capital*. Chicago: University of Chicago Press.

was “the world’s most widely traded commodity at the time” in part because “it was the key raw material during the first century of the industrial revolution.” Essential in appreciating the centrality of cotton to global trade and the development of the industrial revolution is the fact, according to Baptist, that “the returns from cotton monopoly powered the modernization of the rest of the American economy, and by the time of the Civil War, the United States had become the second nation to undergo large-scale industrialization” (2014: xxi). The so-called Second Industrial Revolution took place in the American North.

This chain of conditional statements makes it clear that “efficient” (whipped, tortured, dehumanized) slave-labor was indeed the engine that pushed not only the emergence of modern British capitalism (with wealth accumulation), but also its American variant. Baptist calculates that “cotton pickers [between 1800 and 1860] produced gains in productivity similar to those of cotton factories [400 percent increase]” (2014: 128). Since there were no “mechanical cotton until the late 1930s,” increased productivity was embodied in enslaved pickers and the techniques they were forced to incorporate into their daily practices. The “existential contradictions between productivity and freedom,” says Baptist, would never have to be resolved, since white enslavers did not have to free their slaves to increase their productivity; instead, they used “measurements to calibrate torture in order to force cotton pickers to figure out how to increase their own productivity and this push through the picking bottlenecks” (2014: 130). In fact, Adam Smith’s argument about the increased efficiency of free labor and the lower costs associated with it was falsified in the Antebellum South, and with this empirical falsification the ideals of liberty vanished. The pretense that capitalism was predisposed to and entailed universal emancipation for its optimal success was a sham. In fact, the historical record shows (despite counter-examples by Baptist’s critics) that in order to achieve levels of efficiency only capitalism promised (in contradistinction to feudal modes of production), slaves had to “behave in the fields as if they themselves were disembodied, mechanical hands that moved ever more swiftly over the cotton plant at the wave of the enslaver’s hand” (2014: 142).

There seems to be no doubt in Baptist’s mind that without slavery American capitalism would have not evolved as successfully. The mythic distinction between the backward agricultural South and the enlightened or industrialized North is debunked with ample evidence: “Northern growth in general and the fortunes of its middle and upper classes in particular were built on the forced labor of [slaves]” (2014: 311). The increased and ever cheaper raw materials (cotton) that were transported to Northern mills or exported to European manufacturers (primarily Britain) financed not only the British industrial revolution but also its American counterpart, “the world’s second industrial revolution” (2014: 312). Baptist argues that the Euro-American development of capitalism depended on “the growing [profit] margin between the price of raw cotton and what the price would have been if picked by free labor” (2014: 318). Slave-labor produced greater surplus value than wage labor because of its greater efficiency and the unlimited exploitation and reproduction it facilitated. If this claim seems exaggerated, Baptist is quick to provide statistical evidence: “more than \$600 million, or almost half of the economic activity in the United States in 1836, derived directly or indirectly from cotton produced by the million-odd slaves—6 percent of the total US population—who in that year toiled in labor camps on slavery’s frontier” (2014: 322). To say that cotton was a negligible part of the US economy, as some claim (Eugene 1971: 157)¹, seems simply false. In fact, as Baptist concludes: “The Northern economy’s industrial sector was built on the backs of enslaved people”

1 Eugene D. Genovese (1971) *In Red and Black: Marxian Explorations in Southern and Afro-American History*. New York: Pantheon, p. 157.

(2014: 322.) and in this sense slavery was necessary and perhaps sufficient condition for American capitalism.

III: Racial Capitalism

In the 2000 reissue of his book, *Black Marxism*, Cedric Robinson frames his analysis of the continuous radical Black Radical Tradition and the emancipatory zest it has had for centuries under enslavement and expropriation in a critique of European thinkers, such as Kant, Hegel, Marx, and Engels. His bifurcated critique challenges both their “concealed” “faith in philosophy” and, more particularly, a certain conceptual universalizing move for the sake of “scientific elegance” and “interpretive economy.” The intertwined liberal faith in the philosophical potential for critique and revolutionary emancipation and the quest for scientific legitimacy “consigned race, gender, culture, and history to the dustbin.” This meant for Marx, according to Robinson, that however abhorrent slavery was to him, it remained “an embarrassing residue of a precapitalist, ancient mode of production,” and as such it “disqualified” slaves “from historical and political agency in the modern world” (2000: xxviii-xxix). Admittedly, Robinson’s critique is supposed to point to a European blind spot that prevented 19th century philosophers from recognizing the potential agency of slaves to revolt and free themselves (see 2000: 307ff); but this critique also implicitly answers the question about the necessity of slavery for the development of capitalism. If slavery was precapitalist, could it also be the productive engine of capitalist production? Robinson’s definition of Black Marxism is less about a “contestation” between Marxism and the Black Radical Tradition or a “revision” of their intermingling. Instead, it is a “new vision centered on a theory of the cultural corruption of race. And thus, the reach and cross-fertilization of the [Black Radical] tradition became evident in the anticolonial and revolutionary struggles of Africa, the Caribbean, and the Americas. . . [and] a culture of liberation” (2000: xxxii). In this sense, liberal abstractions are recalibrated to include race as an essential feature of emancipatory promise and goal.

For Robinson, “racial capitalism” refers to the “development and to the subsequent structure” of racialism as a “historical agency” found in capitalism’s emergence and dominance. (2000: 2). In this sense, then, slavery and the slave trade should not be consigned to a precapitalist historical stage, but appreciated as “integral to the modern world economy” (2000: 4). Robinson argues that though to some scholars “the relationship between capitalism, colonization, and slave labor had appeared almost coincidental,” for him the relationship between capitalism and slave labor became the “very foundation of New World enterprise” (2000: 110), a capitalist enterprise that depends on settler-colonial barbaric militarism. Though crediting Marx with recognizing the importance of slave labor in the development of industrial capitalism, Robinson relies more on Williams’s insistence that the “fabulous wealth” that was “created by slaves, was enjoyed not only by planters and in the colonies, but by the mother country” (2000: 113). As already discussed above, slavery was crucial for the emergence of industrial capitalism first in Britain and then in the United States. The conclusion Robinson draws from historical records and the scholarly work of others is that “historically, slavery was a critical foundation for capitalism” (2000:116). Capitalism here is universalized to include the different capitalist modes of production apparent in the European continent and in the Americas, and the notion of *critical foundation* suggests more than the necessary condition for the development of 19th century capitalism (wherever spotted). One can read “critical” to mean essential and “foundation” to mean the very framework on which and scaffolding with which industrial capitalism came into its global dominance.

As he concludes his book, Robinson supports this view of the relationship between slavery and (British) capitalism in focusing on the “new imperialism” of “monopoly capitalism” that, with the aid of the “colonial state,” “forcibly recruited labor” (2000: 312), or more precisely, labor power. Citing Du Bois’s view that “capitalism and slavery were related systemically,” that monopoly capitalism “extended rather than arrested that relationship,” and that this “relationship” would dissolve because of its “contradiction,” Robinson intimates that as much as slavery brought about global capitalism, the resistance to it (“mounted the attack on capitalism”) became the “most sustained threat to the American capitalist system” (2000: 313-4). From Robinson’s argument regarding enslaved black resistance and revolt as undermining the very “critical foundations” of American capitalism, we can deduce the essential role of slavery in capitalist production, perhaps even being its sufficient condition¹.

In conclusion, the hypothesis that the liberal spirit in its political and ideological guises underwrites modern market capitalism or that modern capitalism fully embodies the ideals of liberalism is refuted when considering the slave trade and Chattel Slavery in the American context. The very fact that white enslavement of ^{blacks} persisted for centuries in full sight and with the legal protection of (liberally-minded) democratic States only solidifies the argument that capitalism itself can thrive operationally only when (primarily European) whites, as witnessed historically, subjugate and exploit (African transported) blacks (as slaves) or other (incarcerated or wage) laborers when slavery is formally abolished so as to extract surpluses. Adherents to any variant of Critical Rationalism should continue and pursue such critical examination of long-held philosophical myths ungirding theories and conceptual frameworks, whether they relate to liberalism or capitalism and their accompanying attempt to conceal their failures under the veil of ideal democracy. Suggesting that slavery, for example, was a minor aberration that does not reflect the true liberal spirit of capitalism, or extending this way of thinking to the all too familiar contemporary carceral state² displays nothing short of willful ignorance and racist prejudice. Refusal to tackle uncomfortably long-held and cherished misconceptions about capitalism violates the critical and rational mindset that has characterized the works of Popper and those of his disciples who claim to be Critical Rationalists.

If there is anything of Popper’s legacy worth honoring in present and future debates over the political economic realities which some enjoy and others suffer under, as this Special Issue attempts to bring to life, it would be, for example, an unvarnished engagement with the wave of white racism that is spreading globally, veiled as it is with militaristic and religious pretenses about the protection of moral values. The ideal critical rationalist from my perspective is not only a Marxist-Popperian who can draw from *both* sources inspiration for their own work, but also a postmodernist that is leery, like Popper, of meta-narratives that promise too much in their universalizing abstractions, and is likewise insistent, like Marx, that there is more than one perspective from which to view reality. The false binary of Marxism versus Popperianism cannot be upheld anymore when their overlapping critical rationalism is fully recognized. Marx may have been wrong about the impending downfall of capitalism, just as Popper may have been wrong about the

1 Following Oliver Cox’s lead, Robinson argues that Marx not only had faith in philosophy and universalized it in the name of scientific fidelity, but that like his own critique of classical political economists, he should have made slavery “the center of his study” (Ibid. 341 #47). To think of Marx’s critique as misguided, as Robinson does, is to find in its “errors” that can be corrected, such as giving due credit to the slave trade and slavery as crucial for the development of all forms of capitalism that appeared on both sides of the Atlantic Ocean.

2 In this context, see Michelle Alexander (2012), *The New Jim Crow: Mass Incarceration in the Age of Colorblindness*. New York: The New Press.

potential of liberal capitalism to overcome poverty and suffering. Their respective failures are informative and invite further investigations, not an outright rejection of either, or both. I read them both as having a moral compass that guides their respective methods of inquiry. The responsibility of scholarship remains to search for whatever nuggets of wisdom we can find and sensibly redeploy them with care and moral trepidation. Some of our studies may include odd bedfellows; their oddity should increase our curiosity whatever the discomfort of the journey.

References

- Anderson, K. B. (2019). What Marx Understood about Slavery, *Jacobin* (9/5/19); <https://www.jacobinmag.com/2019/09/slavery-united-states-civil-war-marx>; accessed 1/29/21.
- Baptist, E. E. (2014). *The Half Has Never Been Told: Slavery and the Making of American Capitalism*. Basic Books.
- Brown, W. (2015). *Undoing the Demos: Neoliberalism's Stealth Revolution*. Zone Books.
- Eugene D. G. (1971). *In Red and Black: Marxian Explorations in Southern and Afro-American History*. Pantheon.
- Foster, J. B., Holleman, H., & Clark, B. (2020). Marx and Slavery, *Monthly Review* (7/1/20); <https://monthlyreview.org/2020/07/01/marx-and-slavery/>; accessed 1/30/21.
- Losurdo, D. (2014). *Liberalism: A Counter-History* [2006]. Translated by Gregory Elliott. Verso.
- Marx, K. (1955). *The Poverty of Philosophy* [1847]. The Institute of Marxism-Leninism. <https://marxists.architexturez.net/archive/marx/works/download/pdf/Poverty-Philosophy.pdf>; Accessed: 2/12/21. Original French version, *Misère de la philosophie: Réponse à la Philosophie de la misère de Proudhon*, <https://www.marxists.org/francais/marx/works/1847/06/misere.pdf>; Accessed: 2/12/21.
- Marx, K. (1976). *Capital: A Critique of Political Economy, Vol. I* [1867]. Translated by Ben Fowkes. Vintage Books.
- Marx, K. (1996). *Capital: A Critique of Political Economy, Vol. III* [1894]. International Publishers.
- Mills, C. W. (2017). *Black Rights/White Wrongs: A Critique of Racial Liberalism*. Oxford University Press.
- Piketty T. (2020). *Capital and Ideology* [2019]. Translated by Arthur Goldhammer. Harvard University Press.
- Popper, K. R. (1957). *The Poverty of Historicism*. Harper & Row.
- Popper, K. R. (1962). *The Open Society and Its Enemies, Vol. II* [1945]. Princeton University Press.
- Robinson, C. J. (2000). *Black Marxism: The Making of the Black Radical Tradition* [1983]. The University of North Carolina Press.
- Sassower, R. (2006). *Popper's Legacy: Rethinking Politics, Economics, and Science*, Acumen Publishers and Montreal: McGill-Queen's University Press.
- Williams, E. (1944). *Capitalism and Slavery*. University of North Carolina Press.

Love, Compassion and Reason in *The Open Society and Its Enemies*

Sympathy is what we need my friend

Rare Birds (1969)

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ABSTRACT

One may say that *The Open Society and Its Enemies* (OS) offered in 1945 the first complete elaboration of the general approach proposed by Karl Popper, namely his ‘critical rationalism’, a bold generalization of the fallibilist falsificationism in the domain of the empirical sciences masterly proposed in *Logik der Forschung* (1934). The political content of *The OS* has been critically discussed. Nevertheless, not all people insist on the equally important moral dimension of the book, giving it its unity, I submit. Without morality, no critical discussion, no reason, no open society, let us say in a nutshell. I would argue that according to Popper, a strictly Christian morality of love would *not* be the appropriate emotional companion of critical rationalism, but that the less demanding moral emotion of *sympathy or compassion* is perhaps necessary to give it its force against violence. I give some support to this line of argument. In my view, Popper proposed a somewhat unarticulated critical rationalist ‘emotivism’ of sorts. The emotion of compassion is necessary for triggering our moral decisions and values, which are the ultimate basis of the choice for a reason against violence.

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I. A Polemical Defense of Non-Violence

Usually, a moderately oriented political philosophy is moderately defended, and the style of Aristotle, Locke, Hume, Montesquieu, Tocqueville, or of Mill and Aron or Rawls is rather moderate, contrary to the sometimes furious and accusatory styles of Plato, Hobbes, Marx, or Nietzsche and Sartre. One confirms a temperate policy with a moderate criticism of the alternatives. This is in order. In the same way, an immoderate philosophy can be expressed without any moderation, and with much violence. But with *The Open Society and Its Enemies*¹, we have to read a sort of ‘violent’ or very polemical defence of a moderate democratic policy and of toleration against violence and tyranny, even the one of the supposed ‘wisest’ (Plato). Written in New Zealand in 1942-43, it is itself a ‘contribution to the war effort’, and then an immoderate defence of liberal democratic moderation. Mill disguised as a Maori warrior².

Using perhaps unconsciously a famous pun by Hobbes,³ Popper often claimed that progress in civilization comes from the slogan ‘From swords to words!’ One has to try to ‘kill’ ideas, never their supporters⁴. As noted, once by Lakatos, a theory in a Popperian space has something like a difficult life in a dangerous state of war. Try to refute theories, rather than confirm them! Anyway, this ‘war with words’ is polemical, but is nevertheless a cooperative venture, a ‘friendly hostile cooperation’ (OS [Popper, 2003], ch. 23). That nice oxymoron is not really contradictory. But against totalitarian ideologies, one may be not friendly but quite aggressive, if only because their supporters despise us as culprits of softness.⁵ And one has to be ready to shoot back if they attack us⁶ even in the theoretical world, the open society must be able to defend its principles with some weapons. I would accept that many critical theses defended in OS are too aggressive and objectionable (in particular against Aristotle), but one has to understand the context. The main

¹ RKP, 2003, two volumes (first ed. 1945). Let me warmly thank David Miller for his corrections and remarks, and also the two tolerant and critical referees, and of course Ali Paya

² Many charges against Fichte or Hegel, even if borrowed partly from Schopenhauer or Kierkegaard, are not made in such a way that a majority of Academics would take seriously such a ‘contribution to the war effort’. This is a pity, because Popper’s longest book is full of positive and novel ideas. But admittedly anger is dense in the text (less so in the excessively long endnotes, which should not be overlooked!). Of course, many ideas came from *Logik der Forschung* (1934), the basic book on falsificationism, a kind of negative deductivism, related to the rule of inference that the falsity of the conclusion implies the falsity of at least one premise (re-transmission of the falsity). But only with OS there is a free use of the idea of *truth* (admitted by Popper with joy only after his meeting with Tarski in Vienna in 1935: in effect, he needed it, because he used the notion of falsity) and a generalization of falsificationism under the name of critical rationalism. The realm of what is rationally disputable and arguable, and not only meaningful, is larger than what is empirically testable (empirical science) or provable from axioms (mathematics).

³ *Leviathan*, ch. 17. Hobbes claimed that conventions, ‘without the sword, are but words’, which is not utterly false.

⁴ Some radical Islamists, nowadays, cruelly slaughter supporters of ideas they deem blasphemous. Fortunately, a majority of Muslims do not follow them. But they are influential and damaging.

⁵ The (fortunate) mistake made by the Japanese military dictatorship and by Hitler regarding the democratic and supposedly ‘soft’ USA in 1941!

⁶ Remember Churchill’s remark of great historical importance against Chamberlain about the Munich Agreement in 1938, at a crucial moment. “You were given the choice between war and dishonour. You chose dishonour and you will have war.” This choice between war and dishonour was a moral and political choice.

message to learn from *The OS* is a bold defence of critical rationality and of values such as liberty, equality, justice and peace.

II. Critical Rationalism

One of the most important chapters of *OS*, before the Conclusion (ch. 25), is chapter 24, “Oracular Philosophy and the Revolt against Reason”. This chapter will be my main subject of study. It is rightly well known as the first explicit discussion of critical rationalism, opposed to irrationalism as well as to dogmatic rationalism, which has been over-represented in the history of philosophy since Plato. The typical irrationalist would claim that will (especially will to power) and strong collective passions are much more important in human life and in social life than reason, criticism, debate, impartiality and compromise, rather proofs of weakness. Force or strong collective emotions have to dominate right and reason. Against that point of view, and also against dogmatism, Popper proposed a now famous characterization of the critical rationalist approach:

I may be wrong and you may be right, and by an effort, we may get nearer to the truth.¹

Note how original and provocative is a definition of the rationalist attitude that begins with ‘I may be wrong’. This is more akin to a moderate skepticism than, for instance, to the (dogmatic) pseudo-Euclidean style of Spinoza’s *Ethics*. And let’s also remark that rationality is defined by a dialogue, not only by a personal virtue. But a critical rationalist is someone who does not restrain herself from defending a bold hypothesis *H*, even if she is ready to discuss it with somebody who thinks that non-*H* is true (or any other hypothesis *T* incompatible with *H*). But she has to contemplate a second thought, namely that perhaps her favourite conjecture could be false after all, and then she says to her interlocutor: ‘I may be wrong’ at the same time as she proposes *H* as the best candidate for the choice to be made. Even if she believes sincerely that her pet hypothesis is the best one, she has a reflexive thought which pushes her to suggest to herself: ‘Even if I’m now quite sure I’m right, yet I am fallible, and I may be wrong, and my counterpart, who defends non-*H*, may be right, to my surprise. Let me listen to his criticisms, and let’s freely discuss together more deeply the problem-situation!’ In this manner, a critical discussion can even be a joy. *Gaya Scienza!* Notice that a critical discussion is not a non-cooperative game (in the sense of Game Theory) where each one wishes to win or to obtain the maximal possible benefit. We have a common goal, truth, which transcends us, and our perhaps strong opposition, once formulated clearly and argumentatively, constitutes a good baseline for a common inquiry, a common and cooperative (even if often opposite) effort, because ‘truth is hard to come by.’² A further point that is not explicit in this characterization of the critical rationalist attitude is that our efforts guided by

¹ *OS*, ch. 24, I, p. 249. All the non-referenced quotations which follow come from this chapter, followed in its own order.

² Cf. *CR*, ch. 19, p. 373 (and also ch. 17, 3, (8), on the ‘moral framework’ of a society). Notice also that, as early as 1945, Popper suggested, in the short description of the critical rationalist approach, a possible cognitive progress through more or less approximate truths, that is, false theories but nearer to the truth, years before his (unsuccessful) attempt to formalize the intuitive idea of *verisimilitude* in the Tarskian Calculus of Contents.

the regulative idea of truth would have to be controlled by another regulative idea, one of the ‘argumentative function of language’, in Popper’s words, that is, the idea of the *validity* of an argument¹. Logic is the organon of criticism². The other discussant may discover an affirmation of the consequent in my reasoning or a gap in one of my not wholly explicit deductions (which are often enthymemes).

That is enough for a good critical debate to begin. And there is nothing more rational than a good critical debate, as Popper taught. There is some normative moral dimension in taking logic seriously: one *has to* accept all the deductive consequences of what one asserts (an infinite set) or else change one’s mind about at least one of the premises. Other people are probably better than I am at deducing surprising conclusions from my own hypothesis (see the ‘Robinson Crusoe argument’, below). That was, in effect, what Socrates did, after all. I surmise that nothing of the sort exists for the dubious notion of ampliative, inductive pseudo-consequences: if you tell me that some Frenchmen are knaves, you are surely right, but I do not have the right to impute to you the (probably) false ampliative ‘consequence’ that all Frenchmen are knaves. You commit yourself only to accept all the deductive content of what you assert. In an exchange of arguments, ampliative ‘arguments’ cannot be critical arguments. Of course, if you generalize your position to a larger class, which is perfectly in order as a conjecture, then I may discuss critically any novel deductive consequence of what you assert now as a bolder guess than previously stated.

The modesty of each searcher for truth, the dependence on others, the necessity of intersubjective checks and especially of *social institutions* for debating are overwhelming themes in chapter 24, just as they were in the previous chapter.

Let us return to the putative debate between critical rationalism and irrationalism. Popper claimed that irrationalism is logically superior to dogmatic rationalism, because the latter demands that every proposition, including itself, be supported by argument, but this cannot be done. Then, Popper concluded that critical rationalism is more consistent, like irrationalism recognizing itself to be the result of a non-self-critical choice, in its case, an ‘irrational faith in reason’. The Popperian W. Bartley III was probably right in reacting against this apparently enormous concession to an irrational fideism. His Comprehensive Critical Rationalism (CCR) escapes this irrational jump. Everything, including CCR, is open to critical examination. I do not want to discuss here this bold proposal³. But I submit that a critical rationalist need not confess to an irrational choice, in Popper’s words, as if it were a case of a choice like that of Buridan’s ass, solved by playing heads or tails (as von Neumann recommended in 1944 for such choices). ‘I could have chosen irrationalism equally well, but chance made me a rationalist!’ This would be deeply unsatisfactory.

The concept of choice is a very important feature of Popper’s worldview. Choices appeared in the universe with animals or perhaps even unconsciously with plants. As human beings, we are

¹ See CR, ch. 4 (1948), in the end, and OK, ch. 6, §14.

² See for ex. CR, 1, p. 64, and the important ch. 20, ‘What is dialectic?’ (1940).

³ See David Miller, *Critical Rationalism. A Restatement and Defence*, Open Court, 1994.

responsible for most of our choices: even if we never invented an institution (slavery, say), we are responsible for choosing to support it, to destroy it, at least to reform it, or not do anything: that is the burden of liberty. (In that example, slavery must be destroyed.)

Incidentally, the three (or four) possible attitudes in the face of a fact are an argument for the (Humean) idea that norms cannot be derived from facts, an idea endorsed by Popper with new arguments. One has to use at least one normative premise. Do not say that norms and standards (and proposals)¹ could be derived from facts, because the three possible attitudes are always our responsibility. One cannot be derived from slavery that one has to accept it or not. We have to struggle against it because it is wrong and makes human beings suffer. This gap between facts and norms is even, according to Popper, a legacy of the opening of society in the time of Protagoras and Lycophron (Critical Dualism, ch. 5, III).

III. The Moral Basis of the Choice of Reason

There is no purely logical argument in favour of critical rationalism, which to the contrary, demands the use of logic, but there are good moral considerations that plead for the choice of the critical rationalist approach. And this is exactly what Popper advanced in this dense chapter, escaping, in my opinion, a sheer ‘decisionism’. Popper is just defending the primacy of morality. He puts into examination the moral ‘consequences’ (practical effects) of the two choices. The choice of irrationalism can give way to aggressive violence since ‘anything goes’, so to speak. If so, the choice of critical debate, when it is possible, is better because it is nothing but the decision to replace the bloody war between men with the ‘war’ between their ideas in a peaceful environment: a critical rationalist ecological niche, as Bartley would have put it, an institutional environment favourable to the emergence of different fruitful new ideas, submitted to severe criticisms, as if this was the common rule of the game. Rationality drastically reduces the kind of ‘weapons’ we may use. Like some competitive sports, science and rationality simulate violence without any real violence, in principle. The aversion to violence, omnipresent in the nasty Hobbesian State of Nature (*bellum omnium contra omnes*), is also for Popper a primitive attitude²

¹ See OS 2, Addendum 1 (1961), §§ 12 and 13, with a reference to an important distinction by L. J. Russell between *propositions* (There are many very poor people) and *proposals* (Let’s establish some minimum subsistence income!). A proposal as such cannot be refuted, but it can be discussed: is it feasible nowadays? Has it not some bad unintentional and unwanted effects? Is there not any other proposal to solve the problem? Moral and political proposals can be and have to be critically discussed. One has to note that the first written critical discussion on the best regime (among three possible ones) is attributed by Herodotus to three Persian nobles, after the usurpation of a magus, in his *Histories*, III, 80. Popper quoted it in OS, I. According to Herodotus, the eventual King of the Kings, Darios, in favour of monarchy, of course, won in the end, in particular against Otanes, the supporter of *isonomia* (democracy). But the Athenians listening to Herodotus favoured *isonomia*, criticized later by Plato.

² I would add that before Popper, Hobbes was aware of what the former called “the paradox of freedom” (OS, ch. 12, II). Liberty must be limited for its own sake. The authority of a State is then necessary (against radical libertarians). The difference is that for Hobbes, there was necessarily one singular exception to the equal limitation of liberties (or rights), namely the Sovereign, preferably a monarch, as it was for Hegel. He or She is the *actor* who *represents* us (Lev. ch.16), but we are the *authors* of all his or her acts, even against us. Despotism. Leaders must be checked, as the ‘magistrates’ were in Athens, the grandmother of the open society. But Athens suffered many civil wars, according to Hobbes, the first translator of Thucydides into English. My thesis is that politics must avoid two great evils: tyranny and civil war, often linked. Popper was more concerned with tyranny, but he knew by experience in his native country that civil war can easily give way to tyranny, at least because many people suffering from a civil war can hope for a ‘Saviour’, establishing again some strict order, with a new dictatorship. Liberalism

So that the choice in favour of critical reasons is a moral choice in the end. With this choice come its natural companions: open and pluralistic discussions, the habit of provoking and listening to objections, never mind their origins, toleration, freedom of thought and speech, institutions fostering debates and compromises, rules of discussion, bills of rights etc.

Admittedly, the moral choice of non-violence (outside self-defence) *contra* the choice of violence is difficult to argue with non-moral arguments¹, when moral normative affirmations are of the sort: “It is bad if an innocent person suffers”, or “It is bad to regard men as if they were of unequal natures according to the colour of their skin”, or “There are no slaves by nature (*contra* Aristotle)”, or “It is wrong to claim that women have to be subjugated”, or “If slavery is not wrong, nothing is wrong”². Of course, if these assertions are moral primitives, so to speak, the irrationalists can claim that our choice in their favour is as irrational as their own choice. It seems to me that a critical rationalist defending them as giving reasons in favour of the repudiating of irrationalism is in a much better situation than if one could only say that one is a critical rationalist just because one had to choose arbitrarily, like a pure existentialist à la Sartre. But Popper insists that the moral analysis of the consequences of the two attitudes may ‘influence’ our choice, without ‘determining’ it: he always wants to save our responsibility, for instance the choice of peace over war as a rule³. As Rousseau and Kant did, he makes appeal to our moral consciousness in the end, as Rawls would also do later. Consult yours in reading him (or me). Admittedly, that is not a decisive argument, because our moral consciousness is perhaps only an intuition that others may not have, but there is a time when we have to stop the argumentation. If some man does not regard raping as a wrong thing, we may try to convince him, but in the end, we have to decide that compassion for the victim has to be a virtue. Perhaps education can do something in this direction. But even if you are a Platonist in ethics, you would not do better to induce him to reform his behaviour. Moral demands are not of the type ‘Two and two are four’.

Anyway, I conclude with Popper that the choice of reason is a moral choice buttressed by solid moral intuitions. Surely, again, a man educated to have the habit of beating his wife would not have the same intuitions. He is wrong, even if one cannot prove as a theorem that he is wrong. One can just make it clear that he could not approve his position, if he did not know that he is not a woman. This test would simulate the empathy he should have for any other human being, I submit.

Popper then comes back to the idea that the rationalist proposes to make appeal to reason to solve our inevitable disagreements rather than only to emotions and passions. The irrationalists, who are not committed to consistency, can sometimes make appeal to reasoning, when it is in their

claims that there is a third way, the one that Schmitt despised (checks and balances, free discussion, protection of minorities, etc.).

¹ But that was in effect Hobbes’s result in ch.13 of his great *Leviathan*: the rejection of the state of nature does not come from the moral Laws of Nature, which offer a rational solution to the awful predicament of anarchy, but by a more primitive natural *fear* of immediate violent death: the strongest of all emotions, also used in the rational and artificial building of the Leviathan-State.

² A statement by Lincoln, quoted by Rawls as an instance of what he called (moral) ‘considered judgments’, against which theories of justice can be tested.

³ But, again, pacifism vis-à-vis Nazism was a moral failure.

interests, but they usually put emotions and passions above all ratiocination. They often profess a strong contempt for the mediocrity of democracy, deliberation, science and scientific oriented philosophies. Only they are deep thinkers, whose often obscure language is only reserved for the happy few, the masters, the seers. Popper does not, nevertheless, deny the importance of emotions and passions. Every reader of *The Open Society and Its Enemies*, and every person who met him, can say how emotional and passionate he was¹. We are contemplating a passionate defence of reason over sheer passion as a (fallible) method to try to solve human problems.

Popper makes it clear that irrationalism can be more attractive if it distinguishes and prefers good emotions and passions (love, brotherhood, admiration, etc.) to bad ones (hatred, contempt, envy, cruelty). Good emotions can support good virtues, such as *philanthropia*, friendship, tolerance, and helping the weakest. This last propensity is perhaps what was most specific to Christianity in Antiquity, and Popper adopts it as a crucial component of social justice, as Rawls later would do. Then follow deep pages about love. I like to think that they should have attracted the attention of moral philosophers: 'I hold that he who teaches that not reason but love should rule opens the way for those who rule by hate'. That is a strong thesis. It would be necessary to elucidate the relationship of the Lutheranly educated but self-proclaimed agnostic Popper with Christianity, and that has been done² Globally, in OS, he is very positive about Christian morality³ claiming that Jesus had an important role in the advancement of an open society. He was right in praising the unique character of Jesus and of his teaching. The beauty of the Gospels engenders much (good) emotion and deep moral reflection. But it would be far-fetched to read in them a plea for critical reason, open debates on everything, fallibilism, or refusal of all arguments from authority⁴ Anyway, if somebody preaching love is disappointed, but still believes in emotions as the only way to solve disagreements, he or she may replace love by its contrary, hatred. That move is what Popper is much worried about. Because hatred triggers violence.

About the Gospels, it is clear enough to read in them a universal elevation of the idea of love (*agape*, *caritas*), which is present also in St Paul. One has first to have a strong love for God, and then for all our human brothers, even unknown to us. In what way can Popper have objected to that

¹ His lifelong passion for music is well known. His positive emotions are evident when he speaks of Bach, Mozart, Beethoven or Schubert. But his negative emotions led him to abandon impartiality towards Wagner or R. Strauss.

² See Kiesewetter, 1995.

³ See the Conclusion or final chapter of OS: 'Has History any Meaning?', with a forceful rejection of the idea that God makes or intervenes in History (Augustine and Bossuet, not quoted by Popper, and Kant and especially Hegel), with positive references to Karl Barth. Popper claims that History has no meaning by itself, but that we can and must try to give it one. We are not only pushed by past causes, but also attracted by future ends (in an open future). Let us promote humanitarian and democratic ones! Meaning is our responsibility.

⁴ Even if, as I surmise, Jesus is not responsible for any fallacy, it remains true that most of his premises are supposed to be true by faith (but see the quasi-Greek stichomythia between Jesus and Pilate at the end of St John's Gospel). Of course, no critical rationalist could support the idea that some words, even in the mouth of Moses or Jesus, or any another one, should be accepted because his or her authority.

eulogy of universal love as a solution to human disagreements? Is it not true that, after all, ‘all we need is love’?¹

Not so. One of the first of Popper’s arguments is that love ‘certainly does not promote impartiality’, whereas it is a most important value in science and in the Law. Perhaps Popper did not remember that this remark on love was already a thesis of Hume’s: love as such cannot be, and should not be, impartial and equal everywhere². It is natural, so to speak, to love more one’s children than other children in the world. Otherwise, incidentally, we would always be in mourning. And all the more so since to love our children implies *that we should take much care of them*. There is a moral division of labour: love first your family and your own friends and care especially for them. In love, we have preferences. Of course, we may give money or some of our time to save starving children in the world, by sympathy, but not love them as ours. A vivid feature of Jesus’s teaching goes against the preference we have for our siblings and close friends: his followers must prefer him to their family. His authority is charismatic in the Weberian sense. When he meets Simon, he just says: ‘Follow me!’, and the eventual St Peter abandons everything, job and family, to follow Him: ‘The Word of God first’, so to speak. This is a striking but not at all a critical rationalist attitude, nor a Kantian one³.

We can conclude from these remarks that we have perhaps to love or preferably to like every man/woman, *a priori*, or to try, as a primary reaction when meeting a stranger, to be open with him or her. This is a feature of openness, which to my mind incidentally is the motto of the whole of Popper’s philosophy. That does not imply artlessly that we should become instantly familiar with every stranger: we have to maintain a certain diffidence for a while. As Popper says, we have to know a person to love him or her⁴. But we cannot and should not *love* everybody equally and in the same manner. Love is not like a level plain, but more like a field: it has singularities and various intensities, and this is not *per se* a fault. Popper said: “We cannot love ‘in the abstract’; we can love only those we know”. And he added: ‘Even the best Christian ... cannot feel equal love for all men’. This seems to be a strong criticism of the more ‘extremist’ part of Christian morality. ‘Love thy neighbour as thyself’, is thought-provoking, if only because the notion of ‘neighbour’ is vague. In the Old Testament, it surely meant ‘other Hebrews’, but Christianity eventually universalized it to all human beings. Even more: ‘Love your enemies!’. This is a beautiful demand, but is it always achievable? I doubt it seriously. And the question of forgiveness is a difficult moral question.

¹ If one follows Emmanuel Lévinas, it was already the message of the Ancient Jews: the ‘face’ of the other imposes on me altruistic moral behaviour. I have some doubts about the sufficiency of such a foundation of morality in a Great Society, an ‘abstract society’ (OS, 10).

² The impartiality of our moral concerns is also a utilitarian demand.

³ CR, ch. 7, p. 182.

⁴ With perhaps the exception of the romantic idea of ‘love at first sight’ (Romeo and Juliet). But not all such loves are successful in the long term, if not completed by discussion. One should also speak of the crowds’ love for leaders or ‘stars’ they do not know personally. Of course, Popper was appalled by the crazy collective ‘love’ for Hitler even in his home town. This adulation meant of course also hatred of the Jews, the Romani people, the Slavs. But some other collective ‘loves’ are harmless.

IV. Friend and Foe

Anyway, Popper remarks that even this commandment recognizes that mankind is divided ‘into friend and foe’, and he adds that it is ‘a most obvious emotional division’. I would submit the bold conjecture that this could be a critical allusion to one of the main ideas of the fervently anti-liberal and even for a time Nazi jurist and political philosopher Carl Schmitt, namely that politics is *essentially* defined by the opposition between the friend and the enemy (*Freund und Feind*)¹ This is a seemingly fascinating idea: if you pretend not to have any enemies in the world, your enemy will soon designate you as his enemy², *nolens volens*. Liberal democracies, pretending to replace violence by deliberation would be naïve regimes, ignoring the very essence of political matters. War and exceptional decisions made by the omnipotent Leader in a state of urgency would be the essence of Government. A great reader of Hobbes, the German jurist claimed that Sovereignty was the master concept in Politics for great thinkers before him, such as Jean Bodin and Hobbes, including Rousseau and Lenin (not so for Popper). And who is Sovereign alone decides when exceptional situations occur, and for instance, decides to make war. One should notice that Marxism-Leninism was important in Schmitt’s evolution: he took seriously, not without fear, the idea of a dictatorship of the proletariat, and adopted, from his reactionary point of view, the Marxist aversion to parliamentarism. Marxists think history (before plain communism) is a violent struggle between class-enemies, as Popper remarks. The complete destruction of the class-enemy is a good aim for the working class, because it is its fundamental interest (the ruling class rather wants to impoverish its adversary, in order to increase exploitation, but of course not destroy it, being a ‘vampire’). Schmitt was almost fascinated by this idea of ‘enemies’ in the political domain, even if he himself regarded communists as his enemies.

It would require much work to compare Schmitt’s and Popper’s approaches, as it would be with Leo Strauss or Arendt. Let us say that Popper regards the slogan ‘friend and foe’ as typical of closed societies, either small and tribal, or great and totalitarian. According to him, when following only our emotions, it will be ‘natural ... to divide mankind into friend and foe; into those who belong to our tribe, to our emotional community, and those who stand outside it’ (ch. 24, §III). It is as if, contrary to his anti-psychologist stance (OS, ch. 14), but admittedly not seldom consciously transgressed in OS, Popper suggested that behind the coldness of Schmitt’s abstract distinction, was hidden a strong emotional and archaic drive, inherited from our ancestors, and as such ‘natural’. Popper would have perhaps admitted the factual claim that, as a rule, when a community like a nation comes to be attacked, people tend to forget their own internal divisions in order to fight together with the aggressor. That was the case in 1914, for example, in Germany and in

¹ *The Concept of the Political*, ch. I, II. Popper quoted Schmitt in a footnote in *Poverty of Historicism* (p. 79), written for the most part in 1935, and partly in 1942. He said (OS, II, ch. 12, V) he was much indebted to Aurel Kolnai’s book, *The War against the West* (1938), where the author, in the Conclusion, said the following: ‘We reject the ‘Friend and Foe’ theory of Herr Professor Carl Schmitt.’ This evidence seems to me to amply corroborates my conjecture. One may note that Kolnai left Vienna in 1937, like Popper.

² Just see once more some violent radical Islamists nowadays.

France, where even self-proclaimed Marxists joined their Government against the enemy. In France, Jules Guesde joined the 'Union Sacrée', with Catholics and 'Bourgeois', at the beginning of the Great War. But Popper refuses to accept that the definition of the enemy is the essence (if he had kept that problematic concept in his theoretical workshop) of all politics and to establish it as a normative distinction, like right and wrong. In his mind, politics, which has to be based partly on morality, is in an open society marked by another distinction: the one between the logic of (state) power and the logic of (individual) liberty¹. Ironically, this is perhaps even more Hobbesian than Schmitt's position. The central object of *Leviathan* was the demarcation between the Sovereign's laws (interdictions) and the citizen's liberty or natural right. Of course, as a liberal, Popper insists, against Hobbes, on the desirability of a more or less minimization of the powers of the *limited* state and a Kantian-like maximization of the liberties or rights of citizens, if compatible with the same liberties for all. But Popper was not favourable to a libertarian minimization à la Nozick (*laissez-faire*), not to speak of the more radical demand of some libertarians towards deleting the State. Because the main aim we have to assign to the unfortunately necessary State is the protection of its citizens from violence but also from such misfortunes as epidemics, misery, illiteracy or unemployment. A moral demand is the origin of the most important of Popper's proposals in political matters.

What can surprise the reader, is that Popper, refusing the opposition between friend and foe, had chosen the word 'enemy' as central to his own title. He famously rejected his friend Ernst Gombrich's proposal in 1943 to replace 'enemies' by 'adversaries' ('Enemies better!') A Schmittian could welcome this: 'For once, a staunch liberal recognizes that the elimination of the opposition between us and our enemies is a blind alley! Politics again! But why does the same man criticize the opposition between friend and foe in a book whose title clearly assumes such an opposition, and even with the strong word *enemy*?' That would be, admittedly, a not bad Schmittian argument. An open society has always had and perhaps will always have enemies (but one cannot predict history), and Popper has even explained in Chapter 10 why the 'strain of civilization' is a difficult experience. It is human to have a nostalgia for the security of a more maternal, so to speak, closed society, where one is not every day confronted with personal choices to make, that is, with no psychological security. That is why we need families and close friends. My claim is firstly that it would in effect be a *prima facie* good argument for a Schmittian: one does not escape the opposition between friends and enemies so easily. What I would respond nevertheless is that even if the defenders of the idea of an open society must be prepared to have and confront enemies, who are ready in the end to destroy it, the opposition between the Open Society and its enemies is not at all *constitutive* of the former. It is just a fact, tentatively explainable, but not a conceptual feature of an open society, that *could* exist without any enemies. They are not its principle of unity, no more than they were constitutive of the Aristotelian concept of the unity of a *polis*, which was for him civic friendship (*philia politike*) and also a common and moderate constitution regulating a

¹ See OS, I, about Machiavelli and Pareto, and CR, ch. 17, §3.

multiplicity (against the excessive unity wanted by Plato). But we must not forget forever the idea of the enemy. Let's be cautious and ready.

V. Cooperation, conflict and minimizing evitable sufferings.

Another argument of Popper against putting emotions, even good ones (love, friendship, even compassion), above reason, is subtler. It is according to me the eternal problem of *cooperation* between people with different agendas, aims or even desires. Except in the fantastically utopian Marxian communism, this problem is everlasting: let's think of the free-rider problem (understood by Hume and Rousseau), which reveals itself as a multi-agent Prisoner's Dilemma. Popper maintains that if love cannot promote impartiality, 'it cannot do away with conflict either'. That is a very bold assertion. Many people, Christians and perhaps Buddhists for example, would say that love is the unique solution to human conflicts¹. Given that he had already maintained that love cannot be impartial, and that 'abstract love' makes little sense, Popper uses then an argument with only two persons loving each other. A concrete love:

Tom likes theatre and Dick likes dancing. Tom lovingly insists on going to a dance, while Dick wants for Tom's sake to go to the theatre. This conflict cannot be settled by love; rather, the greater the love, the greater will be the conflict.²

The use of emotions only can give way in the end to violence³, while rational discussion alone can lead to reasonable compromise. I would guess something like this, in the mouth of Dick: 'Well, my dear old Tom, let's discuss. Why don't we go once to the theatre and the next time, go dancing, in turn? As for the first time, let's play heads and tails: what have you to object against this proposal of mine? Tell me yours, if any, please.' This is a (short) rational discussion: "I may be wrong, and you may be right, etc." (replacing 'truth' by 'a good compromise'). Notice that love here is not at all *replaced* by reason, it is helped by reason to solve a potentially violent conflict⁴ a peaceful

¹ Incidentally, love implies compassion but is stronger.

² Again OS, 24, III. When reading it, more than forty years ago, I had the idea that Popper alluded perhaps to a masculine homosexual couple. Neither he nor I had anything against the possible use of such an example, but it seemed to me a bit strange, with 'Tom lovingly'. Surely it means 'by friendship'. As David Miller told me, 'Tom' and 'Dick' can refer to anybody unknown, as in Shakespeare's *Henry IV* (1), Act II, sc. IV. Popper seems to anticipate a bit the battle of sexes, in Game Theory, with no fair Nash equilibria. The choice envisaged by him, from the hypothesis of a strong love/friendship, is not even an equilibrium: for love, each one would attend alone the spectacle or activity he dislikes, to please the other one (with the hypothesis of non-coordination); each one, alone, will regret his decision. Popper's idea is that the use of reasonable discussion is necessary to settle coordination and cooperation problems between equals. That is a very good argument. The privilege of mankind is *Logos* and *dia-logos*. To give one's word is a mean to secure agreements.

³ Perhaps Popper had in mind some Freudian ideas: he regards psycho-analysis as a pseudo-science, full of 'immunizing strategies' (Hans Albert), but he recognized that some of Freud's hunches would belong to a scientific psychology, even the 'ambivalence' of drives, which may be sublimated. Hard to test, but not utterly impossible.

⁴ One flirts here with Hume's radical thesis that reason can be only 'the slave of the passions', but critical discussions can take place also in the search for the common good of the city and above all in science, where passions seem to be the slaves of the growth of knowledge. No science, no mathematics without emotions, no science without a passion for truth and for well conducted critical debates. But the result of a good rational examination of competitive theories has to be (provisionally) accepted as the best so far. *As rationality needs logic as an organon, it cannot be only the slave of passions*. A passionate scientist may support her preferred or even loved theory, but if it leads to inconsistencies, internal or with well tested empirical results it forbids, she has to abandon it or to revise it seriously, with grace.

discussion does not hinge on an abolition of love and friendship in concrete relations. On the contrary, many loving couples would do better with calm discussions than with insults and threats that can hurt and never be forgotten. That is also why civilization has invented a third party, the judge, in principle impartial¹.

But this is definitely not Popper's last argument 'against the idea of a rule of love'. Loving a person 'means to make him happy'². Here Popper's thesis will be categorical: in his dismissal of the idea that personal and private relationships (which are the rule in an archaic tribe) could be a paradigm for social and political relations, he is consistent in stating that 'of all political ideals, that of making people happy is perhaps the most dangerous one'. Totalitarian regimes, but also classical utilitarianism³ and excessive paternalism are his possible targets here. 'The attempt to make heaven on earth invariably produces hell': an Orwellian point before the masterpiece *1984*. There is here accordingly an intellectual mistake about what are our moral duties:

It is our duty to help those who need our help; but it cannot be our duty to make others happy, since this does not depend on us, and since it would only too often mean intruding on the privacy of those towards whom we have such amiable intentions. The political demand for piecemeal (as opposed to Utopian) methods corresponds to the decision that the fight against suffering must be considered a duty, while the right to care for the happiness of others must be considered a privilege confined to the close circle of their friends ... Pain, suffering, injustice, and their prevention, these are the eternal problems of public morals, the 'agenda' of public policy (as Bentham would have said). The 'higher' values should very largely be considered as 'non-agenda', and left to the realm of *laissez-faire*. Thus, we might say: help your enemies⁴; assist those in distress, even if they hate you; but love only your friends.

As is well known, Popper proposed to replace the Benthamite slogan 'Maximize happiness!', by the more modest 'Minimize suffering!' (ch. 9, note 2), a negativism not without any link with his conception of democracy (a regime where leaders can be eliminated without bloodshed) and of course, as he says himself, with his falsificationism in the methodology of the empirical sciences. Just as falsity is easier to grasp than truth (by the apperception of a contradiction in the

¹ See CR, ch. 19, p. 356.

² Popper refers to Aquinas, and St Thomas used the authority of Aristotle in his *Rhetoric*.

³ In my opinion, Popper here anticipates a little the criticism of Utilitarianism by Rawls in *A Theory of Justice*, in particular its § 30, with a criticism of the grand utilitarian calculator who identifies himself or herself with the whole society by a kind of *fusion by love*, making disappear 'the distinction between persons'. Incidentally, Utilitarianism as a social morality is not egoist, as it is caricatured by Marx, but too much altruist, *demanding* that each of us do all supererogatory acts: a moral for saints and heroes, and a misunderstanding of what are our moral duties.

⁴ This shows that Popper, correctly reading the Gospel, does not interpret 'enemy' here as *polemios*: a remark made by the Catholic Schmitt about the Gospel, which commands us to love our *echthros*, the neighbour who hates us, not our *polemios*, our war enemy. During a war, to help our enemy is treason. But Popper would have claimed, one has to help him if he is wounded and disarmed.

consequences of a theory, within itself or with well tested empirical reports), evil is easier to grasp than happiness (a quite subjective notion): a raped woman, a motherless child, a wounded soldier, a tortured human being, or even a sick or unemployed person, these are or should be our concerns. To alleviate suffering is also the aim of medicine since the Greeks, after all. Of course, we should not establish a systematic Negative Utilitarianism, if only because, contrary to general or positive Utilitarianism, it has an optimum, that is, the elimination of all suffering, only possible by the elimination of all sentient life. All life contains some suffering, for example the mourning for a close friend's death. It is only a liberal regulative idea for governments and other public decision-makers. It reminds me of a phrase by the great French/Swiss liberal Benjamin Constant, directed to the attention of governments: 'Be content to be just, but my happiness, I take care of it myself!' (1820).

VI. A morality triggered by compassion. Some remarks about Nietzsche and Marx.

However, even higher and quite nice emotions such as love or even compassion cannot and should not *replace* the use of critical deliberation in politics and in 'institutions controlled by reason' (but also in private life and education). But we have seen that even a 'negative' policy is itself based on a good understanding of our moral duties, and that these have to do with compassion, as it was taught for example by Rousseau (*pitié*) and Schopenhauer (*Neminem laede, immo omnes quantum potes, juva!*). They were despised by Nietzsche, whom Popper could have counted among the enemies of the open society. The smart author of *Zarathustra* literally preferred strongly hierarchical societies, with an inclination to the Hindu system of castes. His anti-Platonism has nothing to do with Popper's (on political matters), because he saw Plato as a rationalist Socratic, and did not consider his aristocratic stance, nor the system of three castes in the *Republic*. His more or less intense hatred of reason¹ and liberal discussion is the same if reason is dogmatic or critical. Nevertheless, of course, we should read him as we should read Plato, Hegel or Marx, because he is brilliant and has often awesome philosophical insights. Popper approves only of his criticism of Wagner..., but makes it clear that he does not like at all the 'blonde brutes' of the *Genealogy of Morals*. Nietzsche opposes 'us', the race of the masters, to 'them', the slaves, and Christianity is a revolt of the slaves. Nietzsche's case for being a precursor of *some* fascist ideas is perhaps better founded than it is in Hegel's case, except the Statolatry and the German nationalism of the latter. But Nietzsche wrote clearly, and Popper's hatred of Hegel, and Heidegger as well, has something to do with their elitist jargon.

He is much more positive with Marx, who could have been, as Popper says of him, a 'benefactor of humanity', when he condemned the effects of the unjust 'unrestrained capitalism', as Popper called it, if his very Utopian communism had not been a predictable disaster, eliminating all human institutions, with their faults, but also with their indispensable qualities: markets, property, banks,

¹ With some exceptions, e. g. his praise for the French Enlightenment in *Human, all too Human*. Perhaps Popper excused him for his excesses because he wrote lucid and clear German. Anyway, besides his genius, Nietzsche was not a friend of the open society. But neither was he a friend of State worship.

state, police, Law, division of labour, countries, money, even exchange are suppressed in ‘the last phase of communism’. What remains? Perhaps *love* between associated enthusiastic workers as self-managers, with no savings, no money, no capital, no incentive and no information about the demand for commodities (a Hayekian point in favour of the market). Childish. Popper has also concocted a quite astute methodologically individualist argument against the classless society (ch. 18, II). The unity of the proletariat comes from the struggle of classes¹, a good ‘dialectical’ argument for Marx’s praise of negative oppositions as the main forces in history. When the Revolution is finished, the working class’s enemy, the Bourgeoisie, is dead. There remains only one class, and a marvellous classless society emerges (in two phases). But, Popper remarks, the struggle of classes is not a duel: if it is ended, the former unity of the proletariat has not any more reason to exist, from the Marxist dialectical argument that its consciousness of class and its unity came from its struggle against the dominant class. Differences of classes may arise again from inside the no longer unified working class. What is true of individuals is not as a rule true of collectives, which are not as unified as individuals. Differences of classes are presumably inevitable in great societies, even if the least advantaged have to be the concern of governments, for moral reasons. ‘Rigid class differences’ are evil, according to Popper². Not because of envy, but for the sake of justice and peaceful cooperation.

VII. The ethical basis of rationalism.

Anyway, it should be clear that for Popper the preference for critical reason is in the end based on morality:

Ethics is not a science. But although there is no ‘rational scientific bases for ethics, there is an ethical basis of science and of rationalism.

These are quite strong assertions, if only because it is rare to see Popper using the vocabulary of ‘basis’³. And of course, he cannot deny that the unended quest for truth is an inspiring ideal in itself. But, more intriguingly, it appears in effect that the understanding of our genuine moral duties for Popper is not essentially a question of reason, but primarily a question of compassion or sympathy, that is, the emotion of pain when one sees others suffering. Including animals, Bentham would have added. People lacking this kind of emotion are psychopaths, or very badly educated people (as were the young Germans in the *Hitlerjugend*). Of course, this emotion has to be rationally discussed, and cannot be our sole concern. But I do not see how our moral duty of helping those who need our help could exist without it. One has to be outraged by unnecessary suffering. Most people in Antiquity and even till the 19th century were not much concerned with the slaves’ suffering. We made significant progress. Slaves in America or prisoners in Nazi or Soviet camps trigger our sympathy and our moral indignation.

¹ Almost a Schmittian point of sorts.

² See CR, ch. 19, p. 370.

³ The basic statements in *Logik der Forschung* are better called ‘test statements’, themselves revisable.

In breaking down the walls of the closed society, the open society eventually extended to the whole of humanity, the domain of those deserving our moral concern when they suffer, even if one cannot help everybody. But surely Popper was right in his advice to use rational discussion and compromise instead of love for solving disagreements. In an ‘abstract society’, you are not committed to loving everybody you meet and everybody whose services you use, but you ought to respect them as you respect an opponent in a rational discussion, or in sports, with their impartial rules (often British, but also Japanese, etc.). But compassion is less demanding than love, and it seems to me to be the emotional basis of altruistic morality. One has not to love a fallen person in a street, but one has to help her to get up. Popper had sharply opposed altruism to egoism, and individualism to collectivism (ch. 6, V). This brings to light two possibilities hidden by the usual confusion between individualism and egoism, namely, ‘collective egoism’, the morality of closed societies, or tribalism, and ‘individualist altruism’, genuine humanitarianism, the morality most appropriate to open societies. Now, altruism, magnificently evoked in the parable of the good Samaritan, is linked with the emotion of sympathy or compassion, in moral contexts¹. This importance of sympathy means that even reason, based on ethics, has some emotional basis, in compassion and its companion, the hatred of violence, because violence always makes people die or suffer. To like other’s suffering is cruelty or Sadism. Heartfelt dislike of other’s suffering is compassion. Only the asymmetry between happiness and suffering, even if their borders are sometimes fuzzy, is the rationale for the choice for critical reason over the passion of love in the end (without eliminating good passions). One has found that even superior animals can feel compassion, as Karl’s dog when he was a child and sick². Compassion is perhaps not as noble a value as is Love, it is weaker, but it is nevertheless a fundamental element of everyday morality in an open society. It fits well Popper’s ‘protectionist’ theory of the state, which demands that the state not only protects us against the violence of our fellow citizens (civil war, crimes) or of hostile foreigners (the state’s main purposes according to Hobbes: no protection, no obedience), but also helps the weakest, those who suffer. The liberal State has to support them in such a way that they are able to manage their happiness and their own ‘plan of life’³ as they wish, in respect of the legitimate claims of others, of their protective rights, and of their liberty not to be submitted to any other master than the impartial Law, as the Ancient Greeks would have said.

Conclusion

In an open society, compassion, or sympathy, controlled by reason, is an emotion not to leave wholly to *laissez-faire*, as the stronger emotion of love has to be according to Popper, but I submit that it must be one of the virtues of good leaders and of civic and virtuous citizens in just institutions

¹ In scientific contexts, the ‘friendly hostile cooperation of many scientists’ implies a respect for impartiality as a result of a peaceful *dissensus*, so to speak.

² *The Self and Its Brain* (with J. Eccles), part. III, Springer: 443.

³ *The Self and Its Brain*, I, §42, p. 145, with a reference to Rawls.

which protect the weak against the strong or against bad luck¹. Admittedly, one cannot ‘suffer with a great number of people’, as Popper says (ch. 24, V), but we may be prepared by sympathy to help some of those who need our help, without aiming to make them happy, as love demands. In the choice of a morally based critical rationalism, there is together a passion for truth, a strong preference for non-violence over violence, which causes much suffering, and with it the appeal to help those who need our help, regarded as sources of learning and equal sources of claims. Suffering is bad. Violence must be minimized. If Popper’s view on morality flirts with emotivism, it would be a rational one: one must have a critical look at our first moves of sympathy (is perhaps this case of misery a fraud?) and we have to discuss together and examine critically our proposals for alleviating suffering.² To insist more than Popper on the emotional basis of morality is my own point, perhaps put a little bit differently from what he said, because, refusing sheer emotivism, with no critical reason controlling it, he does not explain much which emotions bring forth our genuine moral duties, but, I hope, a point deeply with him in spirit.

References

- Eccles, J. & Popper, K. (1977). *The Self and Its Brain*, Springer.
- Hobbes, T. (2008). *Leviathan*, 1st ed. 1651, Oxford University Press.
- Hume, D. (1985). *Treatise on Human Nature*, 1st ed 1740, Penguin.
- Kiesewetter, H. (1995). Ethical Foundations of Popper’s Philosophy, in A. O’Hear (ed.) *Karl Popper: Philosophy and Problems*, Cambridge University Press, pp. 275-88.
- Miller, D. W. (1994). *Critical Rationalism. A Restatement and Defence*, Open Court.
- Popper, K. R. (1957). *The Poverty of Historicism*, Routledge.
- Popper, K. R. (2003). *The Open Society and Its Enemies* (OS), 2 Vols. 1st ed. 1945, Routledge.
- Popper, K. R. (1934). *The Logic of Scientific Discovery*, Routledge, Translation (with new material) of *Logik der Forschung*, Springer.
- Popper, K. R. (1963). *Conjectures and Refutations* (CR), Routledge.
- Popper, K. R. (1972). *Objective Knowledge* (OK), Oxford University Press.
- Popper, K. R. (1976). *Unended Quest*, Routledge.
- Popper, K. R. (2011). *After the Open Society* (posthumous), Piers Norris Turner and Jeremy Shearmur (eds.) Routledge.
- Rawls, J. (1999). *A Theory of Justice*, 1st ed. 1971, Harvard University Press.
- Schmitt, C. (2007). *The Concept of the Political*, German ed. 1932, Chicago University Press.

¹ Something like this is in line with Rawls’s Difference Principle: see *A Theory of Justice*, §17, on fraternity.

² It may be that there is no morality without some strong emotions, contrary to the admirable Kantian attempt to base morality only on (Practical) Reason (with only the sentiment of Respect for the Moral Law in us). The Categorical Imperative, in particular in its second formulation (*Foundations of the Metaphysics of Morals*, 1785) remains nevertheless a benchmark for moral behaviour (Always consider humanity ... as an end, and never simply as a means!). It is incidentally more emotional than the two other formulations, even if Kant would concentrate on the first one (Universalizability) in *The Critique of Practical Reason* (1788). Anyway, Popper, who admired Kantian morality, was not a classical emotivist, because there are genuine rational moral discussions (proposals are rationally debatable), but I submit that he never isolated morality from a strong rejection of violence and from a great concern for the suffering of others. He perhaps anticipated a bit the ethics of care, without its feminist background.



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The Encounter of Two Philosophers with ‘the Crisis of Modernity’: Karl Popper and Hans Blumenberg

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ABSTRACT

Since the emergence of modernity, and in response to its myriad aspects and potentials, which are constantly unfolding, countless reactions have kept emerging in almost all quarters of the globe. A large variety of anti-modern reactions, the common core of which is perhaps the idea that modernity, in one way or another, is illegitimate, stand out among these responses. According to some of these anti-modern responses, modernity has usurped the characteristics and features of religion, which has been the soul as well as the main shaping force of the pre-modern era and has reproduced it in a corrupted form. Two German-speaking philosophers, Karl Popper and Hans Blumenberg, are among the intellectuals who have defended modernity against the onslaught of anti-modern tendencies. In this paper, I briefly, though critically, compare and contrast the approaches as well as some of the arguments of these two thinkers in defence of modernity.

Keywords:

Modernity, Pre-modern era,
Crisis of legitimacy, Religion,
Secularism, Critical rationalism

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I. What Is This Thing Called Modernity

The phenomenon which many writers identify as ‘modernity’ is a complex and perplexing entity whose ‘whatness’ and main attributes are hotly contested. For example, while Leszek Kolakowsky, the Polish philosopher and historian of ideas, has declared that “[W]e have no idea what modernity is” (Kolakowski 1986, p. 9, quoted in Elvin 1986, 209), a French sociologist, Alain Touraine, has suggested that modernity signifies “the ever-increasing divorce between the world of nature ... and the world of the subject” (Touraine 1995, 57, quoted in Desserud 1995, 785), whereas for a British historian, Mark Elvin, modernity is a complex that “contains at least the following three components: (1) Power over other human beings, whether states, groups or individuals, according to the level of the system under consideration, (2) Practical power in terms of the capacity for economic production, (3) Intellectual power over nature in the form of the capacity for prediction and – more generally – of an accurate and compactly expressed understanding” (Elvin, 1986, 210).

For my part, I regard modernity as an emergent social phenomenon which contains indefinitely many possibilities of various sorts. Historically, it emerged in Europe around the mid-sixteenth century. I regard the publication of Copernicus’ *De Revolutionibus* ([1543] as an arbitrary birth date for modernity.¹

The modern age, which emerged from the pre-modern one, witnessed the explosion and release of vast amounts of energy in various artistic, scientific, social, spiritual, and intellectual fields. These energies, in turn, paved the way for the appearance of a plethora of diverse forms of life and accelerated the pace of social change. The rapid tempo of change and development helped to create a fluid situation in which in Marx’s words “All that was solid melted into air” (Marx and Engels, [1848]1967, 83).

Amongst the main features which distinguished modern time and modernity from the old world, the notion of ‘man’s coming of age’ which Immanuel Kant has succinctly and brilliantly described in his ‘What is Enlightenment?’ is worth-mentioning. Enlightenment, according to Kant “is man’s release from his self-incurred tutelage. Tutelage is man’s inability to make use of his understanding without guidance from another. Self-incurred is this tutelage when its cause lies not in lack of reason but in lack of resolution and courage to use it without the guidance from another. ‘**Sapere aude!** Have courage to use your own reason!’- that is the motto of Enlightenment.” (Kant, 1784).

Prominent features of modernity are also captured in a number of aphorisms and catch phrases. For example, the title of one of Nietzsche’s book, *Human, All Too Human* (Nietzsche, [1878]1994),

¹ Paya 2018, 6. It is, of course, not possible to suggest the exact date/place of emergence of historical phenomena. With regard to modernity, while there seems to be a broad consensus about its general, though not specific, place of emergence, there is extensive disagreement concerning its date of appearance. For example, while the *Encyclopaedia Britannica* suggests that “a modern era arrived at the end of colonial invasion and global expansion, which date to the 18th and early 19th centuries” (2023), Lynn Hunt, Professor of Modern European History, has noted that “In 1694 the Dictionary of the Académie française defined *moderne* as ‘new, recent, what is from the latest times. It is opposed to ancient.’” (Hunt 2008, 48). Paul Hazard, a French historian of ideas, has identified the period in which people began to use the term ‘modern’ as 1680-1715 (Hunt, *ibid.*).

or Gramsci's "The challenge of modernity is to live without illusions and without becoming disillusioned" (Gramsci, 1994, 300, quoted in Davies, 2021) are two cases in point.

II. The Crisis of Modernity

What is called the crisis of modernity, according to some writers, is the clash between the emerging natural and social patterns and orders and the patterns and orders which had already emerged and consolidated their hold on the outlook of people. The emergence of new patterns undermines the existence of the old ones, which, in the language of Peter Berger, constitute part of the entrenched institutional background of the social and cultural environments in which the free agents operate (Berger 2014). Referring to the writings of the German social theorist Arnold Gehlen (1904–1976), Berger writes: "Human beings, compared with other mammals, have a relatively meager repertoire of instincts telling them what to do. ... To make up for the meagerness of human instincts, institutions were developed. That is, they erect an area of stability where the individual can act almost automatically and without much reflection, and at the same time, they make possible another area in which the individual is free to make choices. Gehlen called these two areas, respectively, the background and the foreground of human social life. The background is strongly institutionalised, the foreground is de-institutionalised; the background is the realm of fate, the foreground that of choices." (Berger, 2014. 6). It is the burden of making their choices on their own that, in the views of many modern writers, has brought about the crisis of modernity for the moderns.

Other writers have used the phrase 'The Crisis of Modernity' to refer to a range of different theses and factors, some of which may have partial overlaps. For example, Jacob Burckhardt, the nineteenth-century Swiss historian, believed that "the rise of the nation-state, the impact of rapid industrialisation on traditional values and institutions, and the growth of mass movements led by demagogues would alienate individuals from their creative center" and thus lead to the crisis of modernity (O'Brien, 2000, 30). Friedrich Nietzsche and Fyodor Dostoevski, each in their own way, suggested that the Western man turning away from God is the root cause of the crisis of modernity.¹ Edmund Husserl maintained that the crisis of modernity was the result of a 'crisis of European sciences' (Husserl, 1970). Martin Heidegger's writings influenced the views of many German writers concerning the crisis of modernity. Thus, for example, as Daniel Herskowitz has noted: "Cassirer, Strauss, and Buber mobilised Judaism or Jewishness as they understood it as a primal spiritual and moral antidote to the dangers of modern secularism and to the comprehensive crisis of modernity that Heidegger's philosophy represented in their eyes." (Herskowitz, 2021, 12). Leo Strauss, the German-American political philosopher, was of the view that: "The crisis of modernity reveals itself in the fact, or consists in the fact, that modern western man no longer knows what he

¹ Nietzsche, in his *Thus Spoke Zarathustra* (1883) discussed the implications of the death of God in a dramatic way, and Dostoevski, in his *Brothers Karamazov* (1879/1912/2015), made the following point in the course of a discussion between some of the characters of the book: "But what will become of men then?" I asked him, 'without God and immortal life? All things are lawful then, they can do what they like?' (p. 833).

wants—that he no longer believes that he can know what is good and bad, what is right and wrong." (Strauss, 1975, 81, quoted in McAllister, 1995, 133-4). And the Czech writer, Karel Kosik, has discussed the crisis of modernity in the context of what he calls "a system of universal manipulateness":

In a system of universal manipulateness man loses the ability and the need to differentiate; that is, both the ability and the need to discern truth from untruth and good from evil. The system of manipulateness is a system of indifference and apathy, where truth mixes with falsehood and good with evil. Apathy elevated to a governing and constitutional category of reality signifies the identification of truth with untruth, good with evil, the lofty with the base, and, accordingly, universal leveling with universal disparagement. ... False consciousness in a system of generalised manipulation is not, therefore, founded on untruth and lies (which are different from truth), but rather on the blending, the merging—the inseparable mixture—of truth and untruth, of good and evil. ... The system of universal manipulation is founded on the technical arrangement of reality. Technical reason organises reality as an object to be subdued, sized up, disposed of, surpassed. In order that man (and along with man, things, nature, ideas, sensitivity) might become an integral part of the system of universal manipulability, first of all a fundamental epic change must be carried out. This is a change in which being is reduced to existing, the world to *res extensa*, nature to the object of exploitation or to an aggregate of physical-mathematical formulas. It is the transformation of man into a subject bound by a corresponding object to which being, the world, and nature have been reduced. Truth is reduced to exactitude of usefulness, etc., dialectics to a mere method or aggregate of rules, and, finally, to an entirely technical entity (Herskowitz, 2021, 12. Herskowitz attributes this claim to Karl Löwith).

This crisis is also related to a number of other important issues, such as the Enlightenment, Gnosticism, and secularism. The Enlightenment, for some of the main figures in the Frankfurt School, was one of the main factors behind all the evils of modernity. Theodore Adorno and Max Horkheimer, in their *Dialectic of Enlightenment* presented a scalding critique of the Enlightenment as they understood and interpreted it. For them, the Enlightenment gave rise to two hallmarks of modernity: 'progress' and 'oppression' (Oram, 2022, 120). 'Progress' was best manifested in the advancement of a type of science, which according to the members of the Frankfurt School, was positivistic in its outlook and whose essence was nothing but technology and 'oppression' in the form of totalitarian ideologies such as fascism:

In a period of political division into immense blocs driven by an objective tendency to collide, horror has been prolonged. The conflicts in the third world and the renewed growth of totalitarianism are not mere historical interludes any

more than, according to the *Dialectic [of Enlightenment]*, fascism was at that time. Critical thought, which does not call a halt before progress itself, requires us to take up the cause of the remnants of freedom, of tendencies toward real humanity, even though they seem powerless in face of the great historical trend. ... Our prognosis regarding the associated lapse from Enlightenment into positivism, into the myth of that which is the case, and finally of the identity of intelligence and hostility to mind, has been overwhelmingly confirmed. Our concept of history does not believe itself elevated above history, but it does not merely chase after information in the positivist manner. As a critique of philosophy it does not seek to abandon philosophy itself (Horkheimer & Adorno, 2022, xi-xii).

As for Gnosticism, some writers maintained that the modern age was “possessed by an immanentised form of Gnosticism which, at its core, was deicidal and sought ultimately to place man on God’s throne.” (Kroll, 2010, 20)¹ Similarly, for many writers, secularism, even if it can fulfil its promise of facilitating humanity’s march towards material enrichment of individuals, is incapable of satisfying their spiritual needs. In the words of a commentator: “A possible implication of this intertwining of liberal secularism and Christianity, especially insofar as the former attempts to replace the latter, is that if liberal secularism cannot deliver what it promises—the good life in the form of infinite material and economic security—the modern Western social order is left with a crisis of legitimacy and meaning that demands a considered response.” (Rossouw, 2014, 77). In the same vein, Del Noce has argued that both secularism and secularisation lead to harmful consequences for humanity: “Regarding [sic.] the much emphasised the distinction between secularisation and secularism, I think we have to say that secularisation inevitably yields to secularism in the two forms that this latter can assume ...: the first is voluntarism and absolute subjectivism, the second technological physicalism-scientism. The two forms of secularisation yield, respectively, to the first and second form of secularism.” (Del Noce, 2014, 281).

The list of remarks made by various modern observers about what is called ‘the crisis of modernity’ can be further developed almost at will. There are many books in which phrases like “The Crisis of Modernity” or “The Crisis of the Modern World,” or other phrases to the same effect, constitute their full titles or part of it (Del Noce, 2014, Dura, 2014, Hinde, 2000, Meyer, 1989, Guénon, 1927). Writers from various faith backgrounds, Jews, Christians, Muslims, Hindus, etc., have discussed this crisis in their books or papers (Meyer, 1989, Strauss, 1997, Ali, 2023). Authors representing ancient civilisations in India, China, Persia, Latin America and elsewhere have also discussed the crisis of modernity in the context of their culture and tradition (Bhattacharya, 2017; Andrews & Kuiyi, 1988; Shayegan, 1977a, 1977b; Quijano, 1989).

While the phenomenon of ‘the crisis of modernity’ had been noted by many observers, it seems, at least in the context of Germanic Europe, it entered into a new phase as a result of a long debate

¹ Kroll attributes this thesis to, among others, Eric Voegelin 1952.

which lasted almost three decades from the late 1940s until about the early 1980s, mostly, though not exclusively, between three German intellectuals, namely Karl Löwith, Carl Schmitt and Hans Blumenberg (Kroll, 2010, vi). While Löwith and Schmitt, in their own ways, were arguing against modernity and blaming it for the crisis of modern times, Blumenberg was trying to defend the legitimacy of the secular age.¹

The main argument of both Löwith and Schmitt was that modernity is not legitimate because it has borrowed all its key concepts from Christianity while emptying them of their religious meanings. Löwith, in his *Meaning in History* (1949), argued that the modern idea of progress has its roots in the doctrines introduced in the Bible and “on the messianic view of history as a redemptive process. If Western modernity has been obsessed with the idea of progress through political and scientific means, it is only because it stands in essential continuity with the biblical idea of history as a journey towards divine fulfillment.” (Svenungsson, 2014, 69) One of the examples used by Löwith to argue for his case was Marx’s philosophy of history. Löwith claimed that:

The fundamental premise of the *Communist Manifesto* is not the antagonism between bourgeoisie and proletariat as two opposite facts; for what makes them antagonistic is that the one class is the children of darkness and the other the children of light. Likewise, the final crisis of the bourgeois capitalist world which Marx prophesies in terms of a scientific prediction is a last judgment, though pronounced by the inexorable law of the historical process. Neither the concepts of bourgeoisie and proletariat, nor the general view of history as an ever intensified struggle between two hostile camps, nor, least of all, the anticipation of its dramatic climax, can be verified “in a purely empirical way.” It is only in Marx’s “ideological” consciousness that all history is a history of class struggles, while the real driving force behind this conception is a transparent messianism which has its unconscious root in Marx’s own being, even in his race. He was a Jew of Old Testament stature, though an emancipated Jew of the nineteenth century who felt strongly antireligious and even anti-Semitic. It is the old Jewish messianism and prophetism—unaltered by two thousand years of economic history from handicraft to large-scale industry—and Jewish insistence on absolute righteousness which explains the idealistic basis of Marx’s materialism. Though perverted into secular prognostication, the Communist Manifesto still retains the basic features of a messianic faith: “the assurance of things to be hoped for (Löwith, 1949, 44.).

Carl Schmitt was even more radical than Löwith in his enmity with the modern world. He was a dedicated critic of modern science (which he usually identified with modern technology) and a

¹ In recent years a number of scholarly books, papers and PhD theses have appeared in which the above topics is discussed. See, for example, Wallace 1981, Kroll 2010, Gibbs 2019, Gordon 2019, Griffioen 2019, Ebrahimi 2023, Azarfaam 2023.

staunch detractor of the Enlightenment. He maintained that “‘man is evil’ and should therefore be denied the right to make his own history.” (Kroll, 2010, 8). Like many other German critics of modernity, he was of the view that all that is regarded as modern is, in fact, a secularised copy of Christian ideas. Thus, for example, with regard to the modern theory of the state, he maintained that:

All significant concepts of the modern theory of the state are secularised theological concepts not only because of their historical development - in which they were transferred from theology to the theory of the state, whereby, for example, the omnipotent god became the omnipotent lawgiver - but also because of their systematic structure, the recognition of which is necessary for a sociological consideration of these concepts. The exception in jurisprudence is analogous to the miracle in theology. Only by being aware of this analogy can we appreciate the manner in which the philosophical ideas of the state developed in the last centuries (Schmitt, 1985/2005, 36).

III. Hans Blumenberg's Defence of Modernity

III.a. Blumenberg's debate with Löwith

Blumenberg's defence of modernity and the legitimacy of the secular age took the form of a long, on-and-off, dialogue (mostly in writing) with Löwith and Schmitt. His first serious encounter with Löwith was at the Seventh German Congress of Philosophy in Münster in 1962. The main theme of the conference was “Philosophy and the question of progress”.¹

At that conference, Löwith presented a paper entitled “Progress: a fatality” (Hogg, 1968, also see Chorell, 2021). It was mostly a passionate criticism of the ill effects of scientific and technological advances. He reiterated, among other things, a point he had already made in his *Meaning in History*, i.e., the so-called ‘secularisation thesis’: the modern secular age had borrowed its main categories and concepts from Christianity while emptying them of their eschatological and soteriological aspects.² He then went on to condemn the modern idea of progress, which in his view, was the result of a change which began with the advent of Christianity: while man and nature were at the same level in antiquity, with the introduction of Christianity, man's cosmological position was

¹ The papers presented at the conference were collected and published in a volume edited by Helmut Kuhn and Franz Wiedmann. The volume entitled *Die Philosophie und die Frage nach dem Fortschritt*, Munich: Anton Pustet 1964. A number of famous German philosophers and sociologists, such as Jürgen Habermas, Theodor Adorno, Hermann Lübbe, and had taken part in this conference. An English translation of Löwith's paper was published in an anthology edited by Helen Hogg (1968). Kroll has translated the title of Löwith's paper as “the calamity of progress”.

² A fellow traveller, namely Carl Friedrich von Weizsäcker (1912-2007), A German physicist and philosopher, and a devout Christian, had defined this thesis in the following way in a talk entitled “What is Secularisation?": “... the modern world was the result of a secularisation of Christianity. That means that the modern world in certain respects is, and in certain respects is not, a Christian world. Contrary to the beliefs of many Christians and all secularists, I tend to the view that the modern world owes its uncanny success to a great extent to its Christian background. ... To repeat it in traditional Christian language: the gods of nature have been vanquished by the God whom Christians call Our Father; therefore man, ..., has received power over nature. ... [Man] is free, and his freedom includes the freedom to act against the will of ... the God of love. He can now subject the world to himself, and secularism does precisely this.” (1964, 178).

elevated to the centre of the universe. In the penultimate paragraph of his paper, Löwith warned that: "As long as we do not fundamentally revise our whole relations to the world and time, but still assume – as the biblical tradition and the Christian founders of modern science do – that the world is made or created for the purpose of man, and human knowledge for the sake of power, it is hard to envisage any possible solution of the dilemma which progress has become for us." (Löwith, 1964/1968, 94).

Löwith also reiterated a point he had already made in his *Meaning in History*, namely that the philosophy of history of Christianity, i.e. the dominant philosophy of history in the Middle Ages, was fundamentally different from the modern philosophy of history (Chorell, 2021). According to Löwith, while modern history was progressive and open-ended,

What really begins with the appearance of Jesus Christ is not a new epoch of secular history, called 'Christian,' but the beginning of an end. The Christian times are Christian only in so far as they are the last time. And, since the Kingdom of God is not to be realised in a continuous process of historical developments [sic.], the eschatological history of salvation also cannot impart a new and progressive meaning to the history of the world, which is fulfilled by having reached its term (Löwith, 1949, 197).

According to the former, the symbolism of the appearance of Jesus on earth was indicative of the profound idea that there was no separation between the temporal and the eternal. At the end of history, the kingdom of heaven will be fully restored. In contrast, in the modern secular philosophies of history, such as the one which had been suggested by Marx, there was no place for the eternal; the end was wholly secular and man-made. However, it was modelled on the Christian idea of salvation (Löwith, 1949).

In developing his defence of the legitimacy of the modern world, Blumenberg began by emphasising that he treated the 'secularisation thesis' not as a theological doctrine but "a historical category" (Blumenberg, 1983, 151; 2020, 38; Kroll, 2008, 135). He then used this position to develop an argument for the "reversal of the relation of debt" (Blumenberg, 1983, 151): the alleged debt of modernity to Christianity. Blumenberg argued that if Christians maintained that modernity had stolen the Church's property, i.e. ideas introduced in Christian theology, then they had to make their position clear about the following three points: "a) the identifiability of the expropriated goods; b) the legitimacy of the primary property, c) the one-sidedness of its withdrawal." (Blumenberg, 2020, 38, quoted in Kroll, 2010, 135-6). He then went on to argue that none of his proposed criteria can be met by the opponent of modernity: "There is nothing to substantiate the claim of a transposition of eschatology into the idea of progress." (Blumenberg, 2020, 38) With regard to the first criterion, Blumenberg pointed out that eschatological doctrines and the idea of progress are *formally* and *genetically* different: the former deals with things which are transcendent and "answer to the question concerning the meaning and course of history as a whole", the idea of progress, on the other hand, deals with events which are historically situated and "is originally a

structural formula for *theoretical* processes” (Blumenberg, 2020, 38). As for the second criterion, as some scholars, such as Rudolf Bultmann, have argued, Christian eschatology is indebted to ancient cosmologies, such as the one introduced by the Stoics (Blumenberg, 2020, 39). And as for the third criterion, this is also not fulfilled since “eschatology has *historicized itself*.”¹

Another argument that Blumenberg marshalled against Löwith and other opponents of modernity was based on the notions of ‘self-assertions’ and ‘reoccupation of the space of problems left unanswered by pre-modern time’. He argued that since the fourteenth century, when Ockham and other nominalists revolted against Aristotelian realism and introduced the idea that God’s plan is beyond man’s comprehension (Blumenberg, 1983/1985, Part II, section 3, also 202, 392. Also see Gillespie, 2008), the moderns moved along a path initially inspired by Francis Bacon: to shape reality in ways to serve their purposes. This vision, in the hands of the likes of Galileo and his successors, led to the mathematization and mechanisation of nature.² It also led, through the project of the Enlightenment, to two further important developments which decisively set modern time apart from pre-modern time. These developments were firstly, ‘self-assertion’ and secondly, ‘reoccupation of answer positions that had become vacant’. Wallace, the translator of Blumenberg’s *The legitimacy* has explained the above two points thus:

The problem to which modern "self-assertion" (science, art, 'individualism,' etc.)" is a response was posed for us by the overriding emphasis in the late Middle Ages on the theme of divine omnipotence (Wallace, 1983/1985, xviii). When modern thinkers abandoned the Christian 'answers,' they still felt an obligation to answer the questions that went with them—to show that modern thought was equal to any challenge, as it were. It was this compulsion to "reoccupy" the "position" of the medieval Christian schema of creation and eschatology—rather than leave it empty, as a rationality that was aware of its own limits might have done—that led to the grandiose constructions of the 'philosophy of history' (Wallace, 1983/1985, xx).

Another important point that Blumenberg introduced in his discussion was that modern times did not emerge in a vacuum, and while it was not a distorted image of the pre-modern age, it was

¹ Blumenberg 2020, 40, also see Kroll 2010, 137. Blumenberg explains what he means by the above phrase in this way: “It is not that much-derided *autonomous thought* had seized, speculatively usurped, and violently remade the question concerning the end and goal of history; it is instead the inner consequence of the original eschatological idea itself and its ineluctable fate that forced its secularization. The excessive stress placed on the ethical demands in the acute situation of the imminent anticipation, the inevitable refutability of the apocalyptic prophecies, the necessary disappointment of a renunciation that would have triumphed only in the world’s undoing—these factors force answers to questions that had not previously posed themselves and to answer which theology could not attempt an infinite number of times. The elasticity in answering this question, of which theology had a sudden need, the studied indeterminacy and ambiguity of allegorical speculations, the distinct contrast with subtle dogmatic exactitude in other theological articles—all suggested the possibility that this might, after all, be a question not of revelation but rather of secular responsibility.” (2020, 40-1).

² Blumenberg 1983/1985, 1987. Diiksterhuis 1961 and Gorham et al. (eds.) 2016 have discussed mechanization and mathematization of nature at length. Of course, the main result of these developments in approaching nature was the production of far effective explanations which enabled man to exploit nature more successfully.

connected to that age via a set of problems, albeit problems which were no longer carrying any Christian identity badge. Moreover, what set it apart from the pre-modern age was the novelty of its solutions for these problems, problems with which the pre-moderns were grappling without success. Furthermore, modern times introduced many new problems of which the pre-moderns were completely unaware (Wallace, 1983/1985, xviii, Blumenberg, 1983/1985).

IIIb. Blumenberg's Debate with Schmitt

In his attack on modernity, Schmitt had borrowed some ideas from two other critics of the modern age, namely, Löwith and Voegelin. With the former, he concurred by emphasising that: "We know that the belief in progress of enlightenment and positivism was nothing but secularised Judaism and Christianity and drew its 'eschata' from there." (Schmitt, 1950/2009, quoted in Kroll, 2010, 179). With the latter he agreed that modernity was a modified form of Gnosticism, which Voegelin considered to be a manifestation of 'revolt against God,' (Faber, 1984, 23f, quoted in Kroll, 2010, 169). and a new philosophy of history whose aim was to give history a meaning and an end different from what religion suggested (Kroll, 2010, 169). Schmitt maintained that in the secular version of modernity, man tries to create an earthly utopia from which God is absent, "The new human being is aggressive in terms of the ongoing progress and continuous repositioning of himself. ... He snatched away heaven from God and spread out new realms." (Schmitt, 1970/2008, 130-1).

Being a lawyer and a political philosopher, Schmitt would view everything through the lens of legal issues. His arguments against modernity were no exception. Schmitt argued that for modernity to be legitimate, it ought to be legal, but it is not. Why? Because according to Schmitt "the rule of law [is] validated on nothing but sovereignty, that is, the coercive nature of the state" (Bragagnolo, 2011, 114). Schmitt was in favour of absolutism. He introduced, among other things, the notion of absolute potencies, to underscore God's unique position in the scheme of things (Kroll, 2010, 279). Modernity, however, was neither legal nor the notion of absolute had a place in it. It was not legal, because it was the project of creating a new world and a new order by man for man. About this project Schmitt had stated that:

I am repelled by a world made by man for man (Schmitt, 1991, 264, quoted in Kroll, 2010, 180).

Man plans his world history, / what horrible poems they will be! / Ultimately, they will be but rumors, / which I breed as myths. / But God leads man's plan ad absurdum / for ultimately, man's plan is nothing but merely stupid. / Only you are as stupid as that! So all that's missing is that one there, / Deus sive natura, / Deus Spinozisticus sive Spinozistica Natura. // The more man does according to plan, / the more his plan is prone to collapse. / And God's plan, which then appears, / leads ad absurdum friend and foe (Schmitt, 1991, 275f, quoted in Kroll, 2010, 182).

Schmitt presented his arguments against modernity in terms of a model of political theology. For him the secularisation theorem was a specific application of this model (Kroll, 2010, 265). To further develop his argument against modernity, Schmitt introduced a theological notion, *Katechon* [= *katechon*, 'restrainer']. Its theological role was "to hold back the Antichrist until the coming of the Last Judgment." (Kroll, 2010, 20). But its theoretical role for Schmitt in his political theology was "to act as a 'bridge' between eschatology and historical thought:

The belief that a restrainer holds back the end of the world provides the only bridge between the eschatological paralysis of all human events and the tremendous historical power [*Geschichtsmächtigkeit*] of the Christian empire of the Germanic kings (Schmitt, 2006, 60, quoted in Hell, 2009, 287).

In his defence of modernity against Schmitt's arguments, Blumenberg developed a number of interconnected theses. For example, he argued that Schmitt's legalistic approach focuses on normative issues and totally ignores the significance of the historical aspects of the issues under consideration (Kroll, 2010, 263). Blumenberg also was not in favour of Schmitt's theological approach. For example, he did not pay much attention to the notion of *Katechon* which was central to Schmitt's approach to the issue of modernity.¹ His strategy, therefore, was to deal with the issue of the legitimacy of the modern world as a historical development and neither as a theological doctrine nor a purely legal issue (Kroll, 2010, 169). For example, whereas Schmitt had claimed that the friend/enemy or believer/non-believer relation in Christianity was transferred "onto the conflicts between the national states," Blumenberg argued far from "adoption' of theological attributes by the secular state," an important cause for the emergence of absolutist states has been the hostility and rivalry between the Europeans who subscribed to various Christian 'denominations' (Wallace, 1985, xxiv).

Blumenberg also rejected Schmitt's understanding of the 'secularisation theory' (Wallace, 1985, xxiv). By making use of a distinction between 'the content' and 'the function' of ideas/doctrines, Blumenberg argued that the idea of progress was modern (content-wise) and although it is influenced by Christianity (function-wise), it could not be identified with any Christian doctrine (Wallace, 1985, xxvi).

He, however, agreed with Schmitt that there was a marked contrast between "the modern doctrine of the state" (where Schmitt had in mind concepts like sovereignty, *raison d'etat*, 'will,' 'decision,' 'friend and enemy') and modern rationalism that tried to comprehend politics in terms of such concepts as contract, consent, liberty, law, and rights. The latter concepts were all consistent with "self-assertion" and the fundamental individualism that it implies, whereas the former, those used to explicate the notion of the state itself, all suggested the possibility, with which we were so familiar in modern history, of the state overriding the interests of individuals (Wallace, 1985, xxiv).

¹ In his (*Glossarium* 1947, 63), Schmitt wrote: "To me the *katechon* represents the only possibility of understanding history as a Christian and finding it meaningful" (quoted in Hell 287). Also see Kroll 2010.

IV. Popper's Defence of Modernity

While Blumenberg had directly tackled the notion of the legitimacy of the modern world, Popper's defence of modernity was indirect and in terms of his elaboration of some closely connected critical aspects which set modern times apart from pre-modern times. One of these was the phenomenon of the Enlightenment, to which Popper attached a great deal of importance. The other was the notion of progress, the third one was the vexing issue of the historicism and the existence of patterns and meaning in history, the fourth was modern science, the fifth, his defence of liberalism, and the sixth his fierce opposition to dogmatism and absolutism in politics and epistemology.

Popper was an ardent advocate of the Enlightenment project and its ideals. It seems for him one thinker who would be a true representative of the Enlightenment was Immanuel Kant, from whom he had learnt a lot. In a short article on Kant in *Conjectures and Refutations*, Popper, quoting Kant's famous statement in presenting the core message of the Enlightenment, namely, "Sapere aude! Dare to use your own intelligence! This is the battle-cry of the Enlightenment." had noted that: "Kant believed in the Enlightenment. He was its last great defender. ... One might well say that the dominant theme of his whole life was the struggle for spiritual freedom." (Popper, 1963/2002, 239). In talking about Kant and his attitude towards the project of the Enlightenment, it seems, Popper was also alluding to his own relationship with the project of the Enlightenment. As Douglas Williams has noted: "Popper himself, like Kant, tells us that philosophy, understood as the 'legislation of human reason,' has 'two objects, nature and freedom.' And like Kant, Popper contends that these 'two objects' must ultimately be represented in one unified philosophy, for, in both contexts, it is man's reason, the knowing mind that determines their perspective natures and the conditions of their possibility." (Williams, 1989, 47).

Prior to the publication of *Conjectures and Refutations*, in an important letter to Isaiah Berlin, on the occasion of receiving a copy of the text of Berlin's inaugural lecture at Oxford University in 1958, Popper had presented a passionate defence of what he thought to be a correct interpretation of the Enlightenment.¹ Although, in his letter, Popper had stated that he had "a long list" of criticisms of Berlin's paper, he only touched upon two of them. The first one was a critique of Berlin's interpretation of the concept of 'rationalism', as a central theme of the Enlightenment project and the other an alternative interpretation of Berlin's concept of 'positive liberty' in which, contrary to Berlin's understanding of this concept, it could be nicely connected to the Enlightenment's motto, *a la Kant*.²

In place of Berlin's conception of rationalism, which Popper had found wanting, he suggested his own critical rationalist model of rationality. Popper then moved to his second point, which not

¹ The letter is published in Popper 2008, 199-201.

² In a series of three informative articles published online in 2013, James Schmidt has discussed Popper's reaction to Isaiah Berlin's understanding of liberty and Enlightenment. In the above short discussion of Popper's approach to the Enlightenment project I have partially relied on his paper. In his critical review of Berlin's *Four Essays on Liberty*, Anthony Arblaster (1971) shows how Berlin, in the light of the comments of some of his critics, including Popper, had made some substantive changes, not with full acknowledgement, to his earlier views.

only contained a new interpretation of the notion of ‘positive liberty’ but also a succinct elaboration of his own model of rationality:

My second point is your picture of positive freedom. It is a marvelous elaboration of the idea of being one’s own master. But is there not a very different and very simple idea of positive freedom which *may* be complementary to negative freedom, and which does not need to clash with it? I mean, very simply, the idea to spend one’s own life as well as one can; experimenting, trying to realise in one’s own way, and with full respect to others (and their different valuations) what one values most? And may not the search for truth — *sapere aude* — be part of a positive idea of self-liberation? What have you against *sapere aude*? No doubt, the idea that anybody *is* wise, is dangerous and repugnant. But why should *sapere aude* be interpreted as authoritarian? It is, I feel, anti-authoritarian. When Socrates said, in the *Apology*, that the search for truth through critical discussion was a way of life (in fact, the best way of life he knew of) — was there anything objectionable in this? (Popper, 2008, 200-201)

Popper’s other serious effort in defence of modernity was his lengthy discussions concerning the historicists’ theses, which, although being presented as modern ideas, were, in actual fact, entirely anti-modern and against the spirit of the Enlightenment. In dealing with this important topic, Popper also discussed issues related to political absolutism and totalitarianism. In a series of articles entitled “The Poverty of Historicism,” in the journal *Economica* (Popper, 1944-1945)¹, Popper exposed the fatal flaw in all such philosophies of history and showed their role in providing a theoretical framework for totalitarian ideologies. Popper further developed his critique of totalitarianism and its roots in his *The Open Society and Its Enemies* (Popper, 1945/1966).

Popper’s project in this book was more substantive: he tackled the origins of the epistemological roots of totalitarianism in the epistemological theories of Plato, Aristotle, Hegel and Marx and their models of rationality. He contrasted these models of rationality with his own model of critical rationalism. He argued that his model, which was inspired by Kant’s model of rationality, promulgated all the values and objectives of the project of the Enlightenment. In the last chapter of the book, Popper discussed the important issue of the presence or absence of any meaning in history. In a later publication, *The Myth of the Framework*, whose subtitle was: *In Defence of Science and Rationality* (Popper, 1994), in a chapter entitled “A Pluralist Approach to the Philosophy of History,” Popper, among other things, revisited some of the themes he had discussed in that chapter, in particular, the important problem of ‘meaning in history’ from a new angle:

It was the theory that there is a plot in history, whether theistic or anti-theistic, that I called by the name 'historicism'. ... I am, however, alive to the dangers of stagnation, including the danger of letting my own ideas stagnate. And I will

¹ These articles were later on, in 1957, published as a book.

therefore not say anything further here against historicism. On the contrary, I will ask here whether there is not, perhaps, a gram of truth in historicism, or more precisely in the historicist idea of a plot in history. In other words, I propose to take a fresh look, though only a very brief one, at my first question - Is there a plot to history (or at least to human history) — and even to answer it by saying that, by and large, the answer seems to be 'yes' (Though I wish to make it quite clear that I do not thereby weaken my criticism of historicism I still regard historicism as badly mistaken) (Popper, 1994, 131-2).

The 'meaning' that Popper conceded could be found in history was the growth of knowledge, or perhaps more precisely, the growth of scientific knowledge (in the extended sense of the term science, which includes all types of knowledge about reality): "[I]f we look back from our present vantage point, we can say, I think, ... that the growth of knowledge - and of scientific knowledge - forms something like a plot of history. [W]e can see the growth of our knowledge not only as the main plot of human history, but perhaps also of the evolution of life." (Popper, 1994, 132-3).

While Popper was not in favour of discussing the meaning of words, and the so-called 'meaning analysis,' or similar approaches popular among the philosophers of language (Popper, 1981/1985, 9n, 181), the issue of the meaning of life and a meaningful and responsible existence, which is guided by reason and lofty ethical ideals of the kind Immanuel Kant had introduced, including his maxim concerning treating others as ends in themselves and not means, was also one of the main aspects of his approach to modernity. Referring approvingly to Kant's famous saying concerning the starry heaven above and the moral law within, Popper noted: "The first annihilates the importance of a man, considered as a part of the physical universe. The second raises immeasurably his value as an intelligent and responsible being. I think that Kant is essentially right. ... Human beings are irreplaceable; and in being irreplaceable they are clearly very different from machines. They are capable of enjoying life, and they are capable of suffering, and of facing death consciously. They are selves; they are ends in themselves, as Kant said." (Popper, 1981/1985, 3).

Given the unity of his thought (Watkins, 1974), Popper skilfully connected his account of "rationality of science," "his commitment to political liberalism," "his anti-dogmatism," "anti-totalitarianism" in the shape of a coherent narrative (Shearmur, 1996, Ryan, 2012, Notturmo, 2000). For example, he argued, in powerful manner how justificationism in epistemology leads to dogmatism in one's knowledge-garnering quest and this attitude, in turn, paves the way for political dogmatism and intolerance (Popper, 1945/1966, Miller, 2006, Oram, 2022). In developing his unified model, Popper managed to revive and defend the main ideals of the Enlightenment. In the words of one critical rationalist: "...Popperian conception of science and reason, and the Enlightenment ideal of the rational society is one and the same as the ideal of the free, open society. At a stroke, a major objection to the Enlightenment Programme is overcome!" (Maxwell, 2006, 179. Also see Maxwell, 2017).

Popper and Blumenberg: Similarities and Differences

A detailed study of the works of Popper and Blumenberg reveals many similarities as well as a number of differences in their intellectual outlook towards the modern world and the project of the Enlightenment. In what follows, I shall briefly touch upon some of their more important commonalities and differences.

They are both, as we have seen above, against absolute powers that stifle men's power. Both maintain that reduction of ills is preferable to the accretion of 'happines'. Popper discusses this notion under a rubric which became popularised as 'negative utilitarianism', although it was not a description that he embraced¹: "I believe that there is, from the ethical point of view, no symmetry between suffering and happiness, or between pain and pleasure. Both the greatest happiness principle of the Utilitarians and Kant's principle 'Promote other people's happiness ...' seem to me (at least in their formulations) wrong on this point which, however, is not completely decidable by rational argument. ... In my opinion ... human suffering makes a direct moral appeal, namely, an appeal for help, while there is no similar call to increase the happiness of a man who is doing well anyway" (Popper, 1945/1966, Vol. 1, 284-5. Also see Shearmur, 2006, Magee, 1973, Gorton, 2023). Blumenberg has referred to this idea in the context of his discussion of the notion of progress: "Augustine's explanation of the bad in the world as the result of human wickedness; as a species-wide quantity, made it necessary for any subsequent notion of progress that would undertake to diminish the bad in the world also to establish man's ability to lessen his culpability by his own efforts. The idea' of progress, as was to become evident much later on, requires a reversal of the causal relation between moral and physical evils; it is founded on the assumption that in a better world, it would be easier to be a better person." (Blumenberg, 1985, 53-4. Also see Kroll, 2010, 242).

Neither of the two philosophers has discussed the problem of evil at length and in detail. However, sporadic discussions of this issue can be found in the works of both.

Both philosophers are against essentialistic approaches in the social sciences and humanities (Popper, 1954/1966, Heidenreich, 2020, Svenungsson, 2014), positivism (Popper, 1959/2002, Popper, 1963/2002; Blumenberg, 1987)² and both endorse the emancipatory role of knowledge (Popper, 1963/2002, 175; Blumenberg, 1983/1985, 6).

While Blumenberg's attitude toward religion appears to be rather negative, as he takes Nietzsche's 'Death of God' seriously and talks about it as a metaphor (Rasmussen, 2009), and treats Christianity as a myth (Kroll, 2010), Popper has a much more reverent attitude towards religion (Paya, 2018, ch. 3, and Paya's paper in this issue).

¹ For the term and theory of 'negative utilitarianism' and its place in Popper's oeuvre see Shearmur 1996 ch. 4 and Kadlec (2008).

² Popper 1959/2002, Popper 1963/2002; Blumenberg 1987. While Popper's attack on positivism is more direct and explicit, Blumenberg's critical attitude towards positivism is more implicit. The following quotation is a case in point. Rephrasing, "Oh Nicholas Copernicus, be glad that you did not end up in our age, the era of the spirit's enslavement, of historicism, of empiricism, of positivism; if you were to come forward today with such a daring, such a heroic apriorism, you would have to atone for your idealistic chimaera, as a shocking anachronism, in-at least-a madhouse!" (1987, 83).

Both philosophers adopt a problem-oriented approach to epistemic and non-epistemic issues (Popper, 1999, Blumenberg, 1983/1985). Both maintain that the modern world has introduced many new problems unknown to the pre-moderns while it has provided solutions for the problems that the pre-moderns have not been able to solve (Popper, 1963/2002; Blumenberg, 1983/1985).

Popper, it seems, lays more emphasis on the importance of dialogue and dialogical approaches than Blumenberg. Popper had famously stated that: "I may be wrong and you may be right, and by an effort, we may get nearer to the truth." (Popper, 1994, xii; Blumenberg). Blumenberg, on the other hand, though in favour of dialogical approaches, "is quite clearly insisting that the question of significance or meaning of the modern point of view, whether of knowledge, rationality, nature, or progress, can *only* be asked in a much more *limited* 'dialogic' context than is often assumed." (Pippin, 1997, 267, the second italics added).

While both philosophers held modern sciences in high esteem, Blumenberg maintained that science could not create meaning and tame reality, whereas, in his view, myth could. Blumenberg was keen on the study of myths. Some of his major works were about this subject matter (Blumenberg, 1988). The study of myths, *per se*, was not among Popper's areas of research. However, he maintained that myths of all types form part of our background knowledge and to acquire genuine knowledge about reality, "we start from myths - from traditional prejudices, beset with error - and from these we proceed by criticism by the critical elimination of errors" with the help of evidence, to correct our mistakes, our prejudices, our tentative theories. This process leads to the emergence of new problems, "And in order to solve these problems, we invent conjectures, that is, tentative theories, which we submit to critical discussion, directed towards the elimination of error."

Blumenberg ended up adopting a relativist position and a sophisticated approach (Wallace, 1987, xxxiii; Nicholls, 2016). For him truth was not an objective ideal towards which we should proceed in our knowledge pursuits, it was a matter of rhetoric and negotiation (Nicholls, 2016). Popper, on the other hand, was a staunch realist for whom truth, in an absolute and objective sense, was the central goal for all knowledge pursuits. Moreover, while he was a stalwart supporter of epistemic pluralism, he was fiercely against relativism (Popper, 1983, Miller, 2006).

While both philosophers were of the view that modernity did not emerge in a vacuum, it seems Popper laid a greater deal of emphasis on the role of tradition in helping the moderns to tackle their modern problems (Popper, 1963/2002, ch. 4; Blumenberg, 1983/1985).

With regard to the future of mankind, Blumenberg seems to be more gloomy in his outlook. As Martina Urban has explained

From the second half of the nineteenth century to the 1930s the idea of *Weltbild* became 'the vehicle of the philosophical problem par excellence...'. World images not only frame how we perceive and visualise sensate reality but also point to man's place in the order of being. It is for this reason that Hans Blumenberg described world images as the 'quintessence (Inbegriff) of reality

in which and through which man understands himself, orients his evaluations and his practical objectives, assesses his possibilities and necessities and imagines himself in his essential needs.’ In the modern period world images were also increasingly replaced by what Blumenberg casts as ‘world models’ sponsored by the natural sciences. But due to their pragmatic nature, world models remain indifferent toward meaning structures and normative horizons traditionally provided by *Weltbilder*. Assuming a cautious and somewhat pessimistic position, Blumenberg held that philosophy must resign itself to the collapse of world images and the meaning vacuum furthered by their historicisation and—in order to remain uncompromised by their potential abuse by interest-driven politics—acknowledge the impossibility of their renewal. What is left is the formulation of a concept of *Bildung* that immunises culture against ideological seduction and manipulation and resists the human need for world images (Urban, 2018, 171-2).

Popper, however, was an optimist. For him to be an optimist was a moral duty:

It is our duty to remain optimists. Perhaps I should explain this in a few words ... The future is open. It is not predetermined and thus cannot be predicted – except by accident. The possibilities that lie in the future are infinite. When I say ‘It is our duty to remain optimists’, this includes not only the openness of the future but also that which all of us contribute to it by everything we do. We are all responsible for what the future holds in store. This is our duty, not to prophesy evil, but, rather, to fight for a better world (Popper, 1994, xiii).

Concluding Remarks

More than five centuries after the emergence of a phenomenon which is now identified as ‘modernity,’ what had been dubbed by some writers and commentators ‘the crisis of modernity,’ still challenges many great minds all over the globe. The crisis in question has been formulated in various ways by different writers. One popular formulation which is being promoted by some influential scholars, is called ‘the secularisation hypothesis’. According to this formulation, the modern world is an illegitimate construct that has borrowed all its main identifying features from the old world and has no property that it can claim to belong to itself and not borrowed from the pre-modern world.

Two modern-day philosophers, namely Karl Popper and Hans Blumenberg, have tried to defend modernity against the charges of inauthenticity and illegitimacy. The present study revealed that there are many interesting similarities as well as differences in their perspectives and approaches. Although these two philosophers were contemporaneous and shared the same mother tongue (German), they have had no contact with each other. According to Dr. Rüdiger Zill, who has written a comprehensive intellectual biography of Blumenberg has only referred to Popper in one of his

publications, namely, *Theorie der Lebenswelt*.¹In this publication, Blumenberg refers to Popper’s *Objective Knowledge* (Blumenberg, 2010) and his discussion concerning “the complex of avoiding the immunisation of our theories against refutation.” (Blumenberg, 2010, 241).

A critical comparison of the philosophical approaches of these two philosophers makes it clear that while Blumenberg was more inclined to explore the issues related to the problem of ‘the crisis of modernity’ by means of some sort of linguistic approach consisting of an analysis of metaphors and myths, Popper was more interested in a critical analysis of substantive aspects of the phenomenon of modernity. Thus for example, Blumenberg used his analysis of the myth of Prometheus to argue against absolutism and in favour of pluralism by suggesting that the myth of Prometheus represents, in a metaphorical manner, a division of power between gods:

Only a god can in turn curtail a god. That is the punch line of the myth of Prometheus, which is expressed in the apophthegm. Löwith didn’t see it, because he saw in the suffering of Prometheus the justified punishment for the technology which man rebelliously acquired; but the suffering Prometheus is not the last word of the myth, for Prometheus knows the secret of Zeus and his possible downfall. [...] The gods may be immortal, but their power is not imperishable. Man of course does not count among that which can stand against a god; Goethe had learned that by the example of Napoleon, who had been, and not only to him, but also in the iconography of the times, a Prometheus-like figure,²

By contrast, Popper tackled the political and epistemological aspects of absolutism and pluralism with respect to some actual political and philosophical developments. Regarding political absolutism and pluralism, he analysed the factors which gave rise to it in the context of the rule of the Prussian State and Hegel’s philosophy. Quoting Hegel, he wrote:

‘that which preserves, and continually produces, the State and its constitution, is the *Government* ... In the Government, regarded as an organic totality, the Sovereign Power or Principate is .. the all-sustaining, all-decreeing Will of the State, its highest Peak and all-pervasive Unity. In the perfect form of the State in which each and every element ... has reached its free existence, this will is that of *one actual decreeing Individual* (not merely of a majority in which the unity of the decreeing will has no actual existence); it is monarchy. The monarchical constitution is therefore the constitution of developed reason; and all other constitutions belong to lower grades of the development and the self-realisation of reason.’ And to be still more specific, Hegel explains in a parallel passage of his *Philosophy of Law*—the foregoing quotations are all taken from

¹ Private communication.

² Blumenberg correspondence with Schmitt, August 7, 1975, Briefwechsel, 133f, quoted in Kroll 2010, 272.

his *Encyclopedia*—that ‘ultimate decision ... *absolute* self-determination constitutes the power of the prince as such’, and that ‘the *absolutely decisive* element in the whole ... is a single individual, the monarch.’ (Popper, 1945/1966, Vol. II., 43-4).

Popper concluded his analysis of the ‘absolutist’ part of Hegel’s approach by stating, in a sarcastic manner, that: “Now we have it. How can anybody be so stupid as to demand a ‘constitution’ for a country that is blessed with an absolute monarchy, the highest possible grade of all constitutions anyway?” (Popper, 1945/1966 Vol. II., 43-4) Then turning to the epistemological aspect of the same issue, he wrote:

The idea of a philosophical absolutism is rightly repugnant to many people since it is, as a rule, combined with a dogmatic and authoritarian claim to possess the truth, or a criterion of truth. But there is another form of absolutism—a fallibilistic absolutism—which indeed rejects all this: it merely asserts that our mistakes, at least, are absolute mistakes, in the sense that if a theory deviates from the truth, it is simply false, even if the mistake made was less glaring than that in another theory. Thus the notions of truth, and of falling short of the truth, can represent absolute standards for the fallibilist. This kind of absolutism is completely free from any taint of authoritarianism. And it is a great help in serious critical discussions. Of course, it can be criticised in its turn, in accordance with the principle that *nothing is exempt from criticism*. But at least at the moment it seems to me unlikely that criticism of the (logical) theory of getting nearer to the truth will succeed (Popper, 1945/1966, Vol. I., 493).

Popper then discussed the importance of pluralism both for a political system and an epistemological endeavour in the context of what he called ‘an open society’: “An open society (that is, a society based on the idea of not merely tolerating dissenting opinions but respecting them) and a democracy (that is, a form of government devoted to the protection of an open society) could not flourish if science becomes the exclusive possession of a closed set of specialists.” (Popper, 1994, 110).

It seems Popper’s and Blumenberg’s defence of modernity, despite the differences in their style and emphasis, provide a set of complementary arguments, which to a large extent, does justice to the merits of the modern world.

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References

- Ali, J. A. (2023). Modernity, Its Crisis and Islamic Revivalism, *Religions* 14, 15. <https://doi.org/10.3390/rel14010015>.
- Andrews, J. & Shen, K. (1988). *A Century in Crisis: Modernity and Tradition in the Art of Twentieth-Century China*, The Guggenheim Museum.
- Arblaster, A. (1971). Vision and Revision: A Note on the Text of Isaiah Berlin's Four Essays on Liberty, *Political Studies* 19, 81-86.
- Azarfaam, M. (2023). *Modernity Is Legitimate*, Qoqnu Publications. (in Persian)
- Bartley, W. (1990). *Unfathomed Knowledge, Unmeasured Wealth*, Open Court.
- Bhattacharya, S. (2017). *The crisis of modernity: realism and the postcolonial Indian novel*. Unpublished PhD thesis, University of Warwick.
- Berger, P. (2014). *The Many Altars of Modernity*, Walter de Gruyter, Inc.
- Blumenberg, H. (1983/1985). *The Legitimacy of the Modern Age*, Translated by R. M. Wallace, The MIT Press.
- Blumenberg, H. (1987). *The Genesis of the Copernican World*, The MIT Press.
- Blumenberg, H. (1988). *Work on Myth*, The MIT Press.
- Blumenberg, H. (2010). *Theorie der Lebenswelt*, edited by: Manfred Sommer, Suhrkamp.
- Blumenberg, H. (2020). *History, Metaphors, Fables: A Hans Blumenberg Reader*, Edited, translated, with an introduction by H. Bajohr, F. Fuchs, & J. P. Kroll, Cornell University Press.
- Boggs, C. (1993). *Intellectuals and the crisis of modernity*, State University of New York Press.
- Bragagnolo, C. M. (2011). Legitimacy and Legality: Carl Schmitt and the Dialectic of Modernity, Unpublished PhD Dissertation, Stony Brook University.
- Chorell, T. G. (2021). Unsecularising history and politics: Jayne Svenungsson and Karl Löwith on meaning in history, *International Journal of Philosophy and Theology*, 82(2), 176-192.
- Davies, J. (2021). *Between Realism and Revolt: Governing Cities in the Crisis of Neoliberal Globalism*, Bristol University Press.
- Del Noce, A. (2014). *The Crisis of Modernity*, Montreal, McGill-Queen's University Press.
- Desserud, D. (1995). *Critique of Modernity*, by Alain Touraine, *Canadian Journal of Political Science*, 28(4), 785-786.
- Dijksterhuis, E. J. (1961). *The Mechanization Of The World Picture: Pythagoras To Newton*, Oxford University Press.
- Dostoevski, F. (1879). *Brothers Karamazov*, English translation by Constance Garnett [2015], First Avenue Editions, A division of Learner Publishing Group, Inc.
- Dura, P. (2014). *The Crisis of Global Modernity Asian Traditions and a Sustainable Future*, Cambridge University Press.
- Ebrahimi, Z. (2023). *Fundamental Delay in the Enlightenment*, Rooz-e Gar-e Nou publications. (in Persian)
- Elvin, M. (1986). A Working Definition of "Modernity" *Past and Present*, No. 113, 209-213.
- Encyclopedia Britannica. (2023). Modernity, <https://www.britannica.com/topic/modernity>.

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- Faber, R. (1984). Eric Voegelin: Gnosis-Verdacht als polit(olog)isches Strategem, in Taubes (ed.), *Gnosis und Politik*, 230-248.
- Gibbs, N. (2019). Modern Constitutional Legitimacy and Political Theology: Schmitt, Peterson and Blumenberg, *Law and Critique*, 30: 67–89.
- Gillespie, M. A. (2008). *The Theological Origins of Modernity*, University of Chicago Press.
- Gorham, G., et al. (eds.) (2016). *The Language of Nature: Reassessing the Mathematization of Natural Philosophy in the Seventeenth Century*, Minnesota University Press.
- Griffioen, S. (2019). Secularisation between Faith and Reason: Reinvestigating the Lowith-Blumenberg Debate, *New German Critique: an Interdisciplinary Journal of German Studies*, 46(1 (136)), 71-101. <https://doi.org/10.1215/0094033X-7214681>.
- Gordon, P. (2019). Secularization, Genealogy, and the Legitimacy of the Modern Age: Remarks on the Lowith-Blumenberg Debate, *Journal of the History of Ideas*, 80(1), 147-170.
- Gramsci, A. (1994). Letters from Prison, 19th December 1929, in *Letters from Prison* (Vol. 1), Columbia University Press.
- Guénon, R. (1927/2017). *The Crisis of the Modern World*, Sophia Perennis.
- Heidenreich, F. (2020). *Politische Metaphorologie: Hans Blumenberg heute*, Online Publisher: J. B. Metzler.
- Hell, J. (2009). Katechon: Carl Schmitt's Imperial Theology and the Ruins of the Future, *The Germanic Review*, 283-326.
- Herskowitz, D. (2021). Karl Löwith's Secularization Thesis and the Jewish Reception of Heidegger, *Religions* 12: 411. <https://doi.org/10.3390/rel12060411>.
- Hinde, J. (2000). *Jacob Burckhardt and the Crisis of Modernity*, McGill-Queen's University Press.
- Hogg, H. (ed.) (1968). *Man and His World/Terres des hommes: The Noranda Lectures*, Expo 67/Les Conférences Noranda/L'Expo 67, University of Toronto Press.
- Horkheimer, M. & Adorno, T. (1973). *Dialectic of enlightenment: philosophical fragments*; edited by G. S. Noerr, translated by E. Jephcott, Allen Lane. (The book was originally published in German in 1947).
- Hunt, L. (2008). *Measuring Time, Making History*, Central European University Press.
- Husserl, E. (1970). *The crisis of European sciences and transcendental phenomenology; an introduction to phenomenological philosophy*, translated by D. Carr, Northwestern University.
- Kadlec, E. (2008). «opper's 'Negative Utilitarianism': From Utopia to Reality. In P. Markl & E. Kadlec, (eds), *Karl Popper's Response to 1938*. Peter Lang. pp. 107-21.
- Kolakowsky, L. (1986). Modernity on Endless Trial, *Encounter*, lxvi, reprinted in *Modernity on Endless Trial*, University of Chicago Press.
- Kosik, K. (1995). *The Crisis of Modernity: essays and observations from the 1968 era*, Romnan & Littlefield Publishers, Inc.
- Kroll, J. P. (2010). A Human End to History? Hans Blumnnberg, Karl Lowith and Carl Schmitt on Secularization and Modernity, Unpublished PhD Dissertation, Princeton University.
- Löwith, K. (1949). *Meaning in History*, University of Chicago Press.
- Löwith, K. (1964). Das Verhängnis des Fortschritts, in Kuhn/Wiedmann (eds.), *Die Philosophie und die Frage nach dem Fortschritt*, Pustet.
- Löwith, K. (1968). Progress: A Fatality, in *Man and his world. Terre des hommes*. The Noranda lectures. Les conférences Noranda. Expo 67, edited by Helen Hogg, University of Toronto Press.
- Magee, B. (1973). *Popper*, Fontana.
- Maxwell, N. (2006). The Enlightenment Programme and Karl Popper, in *Karl Popper: A Centenary Assessment: Life and Times, and Values in a World of Facts*, Edited by I. Jarvie, D. Miller, K. Milford, Routledge.

- Maxwell, N. (2017). *Karl Popper, Science and Enlightenment*, UCL Press.
- McAllister, T. (1995). The Crisis of Modernity, chapter 3 of *Revolt Against Modernity: Leo Strauss, Eric Voegelin, and the Search for a Post Liberal Order*, University Press of Kansas.
- Meyer, M. (1989). Modernity as a Crisis for the Jews, *Modern Judaism*, 9(2), 151-164.
- Miller, D. (2006/2017). *Out of Error: Further Essays on Critical Rationalism*, Routledge.
- Nicholls, A. (2016). Hans Blumenberg on Political Myth: Recent Publications from the 'Nachlass', *The Jerusalem Philosophical Quarterly*, 65, pp. 3-33.
- Nietzsche, F. (1883). *Thus Spoke Zarathustra: A Book for All and None*, English translation by R. J. Hollingdale in 1892/1974, Penguin.
- Notturmo, M. (2000). *Science and the Open Society: In Defense of Reason and the Freedom of Thought*, Central European University Press.
- O'Brien, C. (2000). Jacob Burckhardt and the Crisis of Modernity, *History: Reviews of New Books*, 29(1), 30-30.
- Oram, M. (2022). *The Ethos of the Enlightenment and the Discontents of Modernity*, Routledge.
- Pippin, R. (1997). *Idealism as Modernism: Hegelian Variations*, Cambridge University Press.
- Popper, K. (1944). The poverty of historicism, I. *Economica* 11 (42): 86-103.
- Popper, K. (1945a). The poverty of historicism, II. *Economica* 11 (43): 119-137.
- Popper, K. (1945b). The poverty of historicism, III. *Economica* 12 (46): 69-89.
- Popper, K. (1945/1966). *The Open Society and Its Enemies*, London.
- Popper, K. (1957). *The Poverty of Historicism*, 2nd ed. 1972, Routledge & Kegan Paul.
- Popper, K. (1959/2002). *The Logic of Scientific Discovery*, Routledge. Originally published as *Logik der Forschung* in 1935, Verlag von Julius Springer.
- Popper, K. (2008). *After The Open Society: Selected Social and Political Writings*, edited by: J. Shearmur & P. N. Turner, Routledge.
- Popper, K. (1963/2002). *Conjectures and Refutations*, Routledge.
- Popper, K. (1982/1988). *The Open Universe: An Argument for Indeterminism*, Routledge.
- Popper, K. (1983). *Realism and the Aim of Science*, Routledge.
- Popper, K. (1994). *The Myth of the Framework: In Defence of Science and Rationality*, Routledge.
- Popper, K. (1994/2000). *In Search of a Better World*, Routledge.
- Popper, K. (1999). *All Life Is Problem-Solving*, Routledge.
- Popper, K. & Eccles, J. (1981/1985). *The Self and Its Brain*, Springer-Verlag.
- Quijano, A. (1989). Paradoxes of Modernity in Latin America, *International Journal of Politics, Culture, and Society*, 3(2), 147-177.
- Rasmussen, U. H. (2009). The Memory of God Hans Blumenberg's Philosophy of Religion, unpublished PhD Thesis, Theological Faculty, University of Copenhagen.
- Rossouw, J. (2014). Spirit Matters: Life After Secularism and Religion?, in Matthew Sharpe and Dylan Nickelson, Editors *Secularisations and Their Debates Perspectives on the Return of Religion in the Contemporary West*, Springer Dordrecht, 75-92.
- Ryan, A. (2012). *The making of modern liberalism*, Princeton University Press.
- Shearmur, J. (1996). *The political thought of Karl Popper*, Routledge.

- Schmidt, J. (2013). Isaiah Berlin & Karl Popper on Liberty & Enlightenment (Part I, II, III), <https://persistentenlightenment.com/2013/04/14/popperberlinpart/> (accessed 12/05/2023)
- Schmitt, C. (1947/1991). *Glossarium: Aufzeichnungen der Jahre, 1947–1951*. Ed. Eberhard Freiherr von Medem. Duncker and Humblot.
- Schmitt, C. (1985/2005). *Political Theology: four chapters on the concept of sovereignty*, University of Chicago Press.
- Schmitt, C. (2006). *The Nomos of the Earth in the International Law of Jus Publicum Europaeum*, Trans. G. L. Ulmen. Telos Publishing.
- Schmitt, C. (1970/2008). *Political Theology II The Myth of the Closure of any Political Theology*, Polity Press.
- Schmitt, C. (1950/2009). Three Possibilities for a Christian Conception of History, *Telos*, 167-170; originally published as “Drei Stufen historischer Sinngebung” (1950) [book review], reprinted in *Hans Blumenberg/Carl Schmitt: Briefwechsel 1971–1978* (2007)
- Schmitt, C. (1991). *Glossarium. Aufzeichnungen der Jahre 1947-1951*, Duncker & Humblot.
- Svenungsson, J. (2014). A Secular Utopia Remarks on the Löwith–Blumenberg Debate, in Elena Namli, Jayne Svenungsson and Alana Vincent (eds), *Jewish Thought, Utopia and Revolution*. Rodopi, 69–84.
- Shayegan, D. (1977a). *L'Asie Face A L'Occident: Essai sur les mutations socio-cultelles des sociétés traditionnelles*, Amir Kabir Publications. (in persian)
- Shayegan, D. (1997b). *Idos of the Mind and Perennial Memory: Essays in Comparative Philosophy*, Amir Kabir Publications. (in Persian)
- Shearmur, J. (1996). *The political thought of Karl Popper*, Routledge.
- Strauss, L. (1975). The Three Waves of Modernity, in *Political Philosophy: Six Essays*, ed. Hilail Gildin, Pegasus-Bobbs-Merrill.
- Strauss, L. (1997). *Jewish Philosophy and the Crisis of Modernity: Essays and Lectures in Modern Jewish Thought* – Edited by H. G. Kenneth, State University of New York Press.
- Svenungsson, J. (2014). A Secular Utopia Remarks on the Löwith–Blumenberg Debate, in Elena Namli, Jayne Svenungsson and Alana Vincent (eds), *Jewish Thought, Utopia and Revolution*. Rodopi, 69–84.
- Taubes, J. (1984). (ed.), *Gnosis und Politik*, Fink, and Paderborn: Schöningh.
- Urban, M. (2018). *Martin Buber: His Intellectual and Scholarly Legacy*, Brill.
- Voegelin, E. (1952). *The New Science of Politics*, University of Chicago Press.
- von Weizsäcker, C. F. (1964). *The Relevance of Science* (New York and Evanston; Harper and Row. This book was based on von Weizsäcker’ Gifford Lecturer at the University of Glasgow in a lecture series delivered during the academic year 1959–1960.
- Wallace, R. (1981). Progress, Secularization and Modernity: The Löwith-Blumenberg Debate, *New German Critique*, No. 22, Special Issue on Modernism, pp. 63-79.
- Watkins, J. (1974). *The Unity of Popper's Thought*, in P. A. Schilpp (ed.), *The Philosophy of Karl Popper*, Open Court, pp. 371-412.
- Williams, D. (1989). *Truth, Hope and Power: The Thought of Karl Popper*, University of Toronto Press.

Logical Content and Its Malcontents*

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The doctrine that the content of the conclusion of a deductively valid argument is included in the content of its premises, taken jointly, is a familiar one. It has important consequences for the question of what value valid arguments possess, since it indicates the poverty of three traditional answers: that arguments may and should be used as instruments of persuasion, that they may and should be used as instruments of justification; and that they may and should be used to advance knowledge. The truth is, however, that in each of these cases the argument has only a managerial role and, if there is any work done, it is the premises that do it. It will be maintained that this point has little force against the critical rationalist answer, which I shall defend, that the principal purpose of deductive reasoning from an assemblage of premises is the exploration of their content, facilitating their criticism and rejection. That said, the main aim of the present paper is not to promote critical rationalism but to consider some published objections to the doctrine that a statement asserts every statement that is validly deducible from it. The alleged counterexamples to be considered fall roughly into two groups: statements that emerge with time from a rich mathematical or empirical theory, but were originally unformulated and are deducible from the theory only in a non-trivial way (Frederick 2011, 2014; Williamson 2012); and statements, notably disjunctions, that are easily formulated and are deducible from a theory in a trivial way (Schurz & Weingartner 1987; Mura 1990, 2008; Gemes 1994; Yablo 2014). Each of these counterexamples will be evaluated and dismissed.

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Introduction

In this paper I shall try to defend, though in an indirect way, the critical rationalist doctrine that the most important intellectual use of deductive arguments (which may be distinguished from deductive inferences and reasoning) and deductive inferences and reasoning (which may be distinguished from deductive arguments) is to enable us to investigate what our hypotheses and assumptions assert, that is, to elucidate aspects of their content, and thereby, if we are lucky, to bring to light in what ways those hypotheses and assumptions are defective. As part of this defence I shall reject three common claims about the proper purposes of deductive inferences: that they may and should be used as instruments of persuasion; that they may and should be used as instruments of justification or validation; and that they may and should be used to advance knowledge. These points were made succinctly in Miller (2005) with regard to the seemingly unstoppable educational fashion known as *critical thinking*, and they were made at greater length, and more generally, in Chapter 3 of Miller (2006) (see also Miller 1995). I pointed out that in each case it cannot be the argument (whether valid or invalid) that does the work that is to be done (if indeed any real work is done) — the persuading, the justifying, the contributing to knowledge — but the premises of the argument. If a valid argument plays any part in persuading an agent that its conclusion is true, it is only by revealing that the agent must be already persuaded that the premises are true. The argument itself has no persuasive power. If a valid argument plays any part in justifying its conclusion, it is only because the premises are already justified. The argument itself has no authenticating power. If a valid argument plays any part in contributing to our knowledge of the world, it is only by revealing that the premises implicitly contain that contribution. Why validity is so valuable is that a valid argument may be used critically, to reveal that a hypothesis or theory that has been endorsed conflicts with some other item of information (or in some cases, with itself). A valid argument that is used critically, and is successful, does no more than any other argument in uncovering something that is already present, but if that something is an inconsistency, we can use it to reject at least one of the premises from which it was drawn. Our knowledge is not advanced when we learn more by means of reasoning; it is abridged.

I have nothing more to say about persuasion and justification, except to ask why either is regarded as valuable. No doubt arguments, like bribery and physical violence, can be used to persuade, or to justify, but we should question whether they should be. A rational, open-minded person does not need to be persuaded; nor does he need justification for what he thinks. In sum, it is only in connection with the third rejected claim above, the one about the advancement of knowledge, that there is, I think, much more to be said. But something does have to be said. In recent years there have been put forward several related criticisms of the view, which this paper endorses, that the content of a hypothesis, that is, what it asserts or says, should be identified with the class of statements that are deducible from it. It will be necessary to explain the various ways in which each of these criticisms is mistaken.

There are two short preliminary sections to be endured before I turn to my main topic, the correctness or incorrectness of the identification of what a statement says with the class of statements that can be deduced from it; that is, everything that it logically implies. In §1, I shall bring to your attention, but not dwell on further, a noteworthy historical prevision of the central critical rationalist teaching about deductive reasoning, that its primary purpose is inquisitive and inquisitorial. In §2, I shall report and discuss some definitions, familiar to logicians, of logical content. They ought not to be contentious, unless it is supposed that I am planning to settle a philosophical question by mere stipulation. I have no intention of doing this. The issue that is waiting to be discussed is whether the *content* of a statement or theory or hypothesis h (which may, for the sake of clarity, sometimes be called its *assertoric content*) always includes the *logical content* of h , namely $Cn(h)$.

In §3, I shall analyse two fairly recent attempts to bolster the not uncommon view that the existence of mathematical discoveries, and of surprising deductive connections between previously unconnected ideas, shows that deductive reasoning, if undertaken with enthusiasm and perseverance, has a miraculous ability to advance our knowledge. In §4, I shall turn to a rather different type of objection to the thesis that everything that can be deduced from a statement is asserted by it; according to this line of argument, from almost any statement we may deduce, in a transparent way (in particular, by a single use of the rule VI of disjunction introduction) a statement (indeed, any number of statements) that cannot realistically be regarded as part of what the original statement says, its assertoric content. My main response to this objection is that it has little force when disjunctions are rewritten as material conditionals. My response to most of the ways in which the objection has been developed into theories of partial truth and verisimilitude is not dissimilar, but I shall say little on that subject on this occasion. For the most part these theories ignore, or brush aside, the problem of language dependence that has been around, and not properly answered, for over 40 years. I have discussed this problem at length in Chapter 11 of my (2006), and shall revert to it, but quite briefly, in §4.2 below.

1. A 19th century anticipation

Only recently have I come to appreciate to what extent earlier writers have advocated the critical rationalist thesis that the primary role of deductive reasoning is not to extend our knowledge but to criticize and control it. This thesis is really not at all original with Karl Popper, though it is a decisive component (see §VII of his 1957, and the fifteenth thesis of his 1962) of the critical rationalist approach to knowledge of which he was the architect. What is original to Popper is not the thesis that *conjectures* and *refutations* must be sharply separated, but the thesis that they comprise the totality of our intellectual activity; that is, that all reasoning (but not all intelligent thinking) is deductive reasoning.

Without in any way installing the author as an authority, I should here like to quote an extended passage from §II of the Introduction to *Logic, Inductive and Deductive* by William Minto (1893).

Minto, whose name is not too well known, was the successor in 1880 to Alexander Bain (the founder of *Mind*) in the Regius Chair of Logic and English Literature at the University of Aberdeen.

Why describe logic as a system of defence against error? Why say that its main end and aim is the organization of reason against confusion and falsehood? Why not rather say, as is now usual, that its end is the attainment of truth? Does this not come to the same thing?

Substantially, the meaning is the same, but the latter expression is more misleading. To speak of logic as a body of rules for the investigation of truth has misled people into supposing that logic claims to be an art of Discovery that it claims to lay down rules by simply observing which investigators may infallibly arrive at new truths. Now, this does not hold even of the Logic of Induction, still less of the older Logic, the precise relation of which to truth will become apparent as we proceed. It is only by keeping men from going astray and by disabusing them when they think they have reached their destination that logic helps men on the road to truth. Truth often lies hid in the centre of a maze, and logical rules only help the searcher onwards by giving him warning when he is on the wrong track and must try another. It is the searcher's own impulse that carries him forward: Logic does not so much beckon him on to the right path as beckon him back from the wrong. In laying down the conditions of correct interpretation, of valid argument, of trustworthy evidence, of satisfactory explanation, Logic shows the inquirer how to test and purge his conclusions, not how to reach them.

This quotation, along with similar but much shorter quotations from the writings of Cicero and of Russell, may be found in §8 of my (2015). The quotations from Cicero and Minto, and not dissimilar thoughts of Condillac and of Hamilton (1859–1860, Volume III), may be found on the pages devoted to these writers in David Marans's entertaining *Logic Gallery* (Marans 2018).

2. Logical content

Throughout this paper, it will be assumed that, unless otherwise stated, the logic of statements includes classical elementary logic in such a way that the familiar soundness and completeness theorems hold. It will therefore be possible systematically to blur the distinction between the relation $k \vdash h$ (h is deducible from k) and the relation $k \models h$ (h is a logical consequence of k). Nothing of importance will hang on this, but it is useful to be able to supplement the vocabulary of deducibility with the often more flexible vocabulary of logical consequence. In particular, we shall be able to use without discomfort the term *consequence class of h* , and Tarski's notation $Cn(h)$, to refer to the class of statements that can be deduced from h .¹

¹ Logical truths, which are consequences of any statement whatever, are sometimes excluded from every logical content, but this is a technical artifice that, contrary to what Frederick (2014) seems to suggest, is without deep significance. It ensures that the

It is true that some writers (including Popper 1976a, §7) use the word *implication* exactly as I wish to use the word *consequence*, but I prefer to maintain a clean distinction between the relation of implication, for which some writers use the word *entailment*, and its second term (its relatum). But using *implication* as a synonym of *logical consequence* is greatly to be preferred to using it as a synonym for *material conditional*.

It is standard to define the *logical content* $I(h)$ of a statement or hypothesis h as its consequence class $Cn(h)$. (See, for example, Carnap 1935, §6, or Popper 1934, §35, or the abstract of Gemes 1994, who repudiates the definition.) This is the definition that will be adopted here. h is occasionally called the *informative content* of h , but note that this term has a different connotation in Popper *op.cit.*, which will be mentioned in §3.1 below. It is to be observed that set-theoretical relations among logical contents reflect logical relations among statements only in an upside-down and somewhat distorted (but not inaccurate) manner. The logical content $I(h \vee k)$ of the *disjunction* $h \vee k$ of two statements h and k is identical with the *intersection* $h \cap k$ of their individual logical contents, but $I(h \wedge k)$, the logical content of the *conjunction* $h \wedge k$ of h and k , may not be the same as the *union* $I(h) \cup I(k)$ of their logical contents; unless one of h and k is deducible from the other (so that $h \wedge k$ is equivalent to either h or k), the logical content $I(h \wedge k)$ includes, but is not included in, $I(h) \cup I(k)$. This mismatch is avoided by a popular alternative definition of logical content I , a definition that is expressed in terms of sets of models (or structures), rather than sets of statements. On this semantic (or model-theoretic) definition, which was proposed by Carnap & Bar-Hillel (1952) and Bar-Hillel & Carnap (1954), the logical content $I(h)$ of the statement h is identified with the class $M(h)$ of models (thinned down, by the relation of elementary equivalence, to set-hood) in which h is false. The two definitions of the function I agree at a crucial point: the logical contents of the statements h and k are set-theoretically comparable if and only if h and k are logically comparable, that is to say, $I(k) \subseteq I(h)$ if and only if k is deducible from h . But they do not agree in every particular. Set-theoretic relations among the various $M(h)$ reflect much more cleanly the logical relations among statements than do set-theoretic relations among the $Cn(h)$.

In contrast to those philosophers of science who laud the supposed benefits of the *semantic view of theories* (scientific theories are sets of models) over what is disparagingly referred to as the *syntactic view* (scientific theories are sets of statements), logicians tend not to discriminate fussily between the two definitions of logical content $I(h)$, the definition as $Cn(h)$ and the definition as $M(h)$. Even though the senses are distinct, anything said about logical contents in one sense can easily be translated into statements about logical contents in the other sense. Both reformulate, in an alternative vocabulary based on elementary set theory, statements about logical consequence or deducibility. Since the semantic definition of h is technically the more docile, it may be thought that it should be preferred. In the context of the present paper, however, it seems to be quite unhelpful. Some imagination is required to entertain the thought that what a statement asserts is

smallest logical content of all is the empty set, rather than the class of logical truths, and also that no statement h shares any logical consequences with its contradictory $\neg h$.

the set of models in which it is false. Indeed, a statement h never belongs to $M(h)$, its own content, whereas, of course, h always belongs to $Cn(h)$. We shall accordingly retain the definition of logical content $I(h) = Cn(h)$ proposed above.

3. Novelty

3.0 Summary

Let us now look at two fairly recent attempts to controvert the thesis that is being defended here, the thesis that a hypothesis or theory asserts every one of its consequences, that its assertoric content extends as far as its logical content does. Frederick (2011) offers a counterexample, distilled from §7 of Popper's *Unended Quest* (1976a), of a theory in the empirical sciences that has remote logical consequences that were not known, and perhaps could not have been known, to the author of the theory. In a slightly different, more conventional, line of attack, Williamson (2012) reminds us that mathematics is full of surprising and unexpected theorems that were proved only many years after the formulation of the axioms and assumptions from which they were eventually deduced. It is maintained by each of these authors that the examples displayed show that the assertoric content of a theory, what it says, may well be less comprehensive than its logical content.

To the interventions of both Frederick and Williamson the critical rationalist (or anyway, this critical rationalist) replies that, although the newly discovered consequences may not have been known to earlier scientists and mathematicians in any subjective or even intersubjective sense — they were neither personal knowledge nor common knowledge —, they were part of the *objective scientific knowledge* of those earlier times; that is, part of knowledge in the only sense that critical rationalism is concerned with. The existence of the psychological states and processes that feature so largely in traditional, and contemporary, subjectivist epistemology is not denied by critical rationalism, and it is appreciated that without subjective knowledge there would be no objective knowledge. (Without shoemaking subjects there would be no shoes, but shoes are not subjective entities.) But the world of objective knowledge consists of linguistically formulated hypotheses, theories, problems (and much else besides, but that is enough for today); that is, of items that have discarded as much as possible of their psychological patrimony. This answer, that the deduction of new consequences does not extend our objective knowledge, is pretty much the answer that has been given by many authors, at least since Mill (1843). Does either Frederick or Williamson say anything that overturns it?

In both authors' presentations, the disputed thesis that statements assert all their logical consequences, a thesis that I judge to be true, is committed to trial in the company of another thesis, a different one for each author, that is judged by its sponsor to be false; and although neither associate thesis seems to be a logical consequence of the thesis in dispute, each is adduced as providing an argument against that thesis. In Frederick's case, I agree with him that the associate thesis is false, but I deny that this has any repercussions for the thesis that assertoric content is the same as logical content. Contrary to Williamson, on the other hand, I think that the associate thesis that he interposes is true and that, if it has any repercussions for the disputed thesis that assertoric

content is the same as logical content, it is to indicate that it is true. In short, once we disentangle the thesis in dispute from the rogue theses with which it is associated, we shall see that neither author really makes a compelling objection to the objectivist view that a theory asserts everything that in principle may be deduced from it. Both presentations, it seems to me, have an unwelcome justificationist flavour that needs to be exposed and expunged. We shall consider each in turn, first Frederick, and second Williamson.

3.1 Deductive validity and deductive reasoning

Frederick (2011) associates what he calls the 'hoary claim about deductive *validity*' (in his words: 'every deductively valid argument is a *petitio principii*') with

an equally hoary theory of deductive *reasoning*, which is found more or less explicitly in both empiricist and rationalist philosophers of the modern period and which is still popular today. The hoary theory says that a deductive reasoner arrives at a conclusion of an argument by analysing the content of its premises.

Frederick tells us that 'the hoary theory of deductive reasoning may seem to entail the hoary claim about deductive validity', but he soon questions this imagined entailment and writes that, if we were to be granted a distinction between

the objective content of a theory and the part of that content that is available to a particular reasoner in a particular situation, we could consistently retain the hoary theory of deductive reasoning while rejecting the hoary claim about deductive validity. For we could maintain that ... any deductively valid conclusion from a set of premises to which we can reason deductively must be contained in that part of the content of the premises that is already available to us [but there are other parts of the objective content from which] we are currently (and, in some cases, perhaps forever) unable to reason deductively and which would therefore tell us something new even though they are part of the objective content of the premises.

But, going into reverse once more, he then concludes that 'the falsity of the hoary claim about deductive validity casts doubt on the hoary theory of deductive reasoning'. This hardly constitutes a forceful objection to 'the hoary claim about deductive validity'.

Few people who have tried to prove a serious mathematical theorem, and have reflected on what they were doing, can be expected to accredit the theory of deductive reasoning that Frederick says is so hoary. Mathematical work of any depth is far from a smooth process of starting with axioms, or other assumptions, and gaily deducing consequence after consequence. It is much more a business of incessant trial and error in which both the final theorem, if there is one, and its negation, have appeared as trials, perhaps many times (Miller 2006, Chapter 3, §3). This is not to say that there are not algorismic moments in the midst of the fits and starts. It would be perverse, for

example, to resort to trial and error in order to solve a quadratic equation that turns up during an attempt to solve a deeper problem, or to evaluate a familiar integral. But unexpected theorems of interest are indeed uncommon. What is much more common, at the end of a long chain of calculation, is the disappointing conclusion $0 = 0$. Those who forcefully reject the hoary claim about deductive reasoning, as Frederick does, but retain the hoary claim about validity, may wonder why Frederick gives the former claim such prominence. Its falsity tells us nothing about the truth of the latter. Only if it is supposed to furnish a central argument in favour of that claim can its falsity appear to be damaging.¹

The above distinction between the *objective content* of a theory and its *available* (or *accessible*) content is attributed by Frederick to Popper's remark that, since the logical content of a theory is usually infinite, '*we never know what we are talking about*' (*op.cit.*, §7). Popper continued:

For when we propose a theory, or try to understand a theory, we also propose, or try to understand its logical implications [consequences]; that is, all those statements which follow from it. But this, as we have just seen, is a hopeless task: there is *an infinity of unforeseeable nontrivial statements belonging to the informative content of any theory*. We can therefore never know or understand all the implications [consequences] of any theory, or its full significance

and he suggested that if N is Newton's theory of gravitation and E is Einstein's, then '*non- E belongs to the logical content of N , a fact which, obviously, could not have been known to Newton, or anybody else, before E was discovered*'. But this is not quite true. If the theories N and E are spelt out in some common mathematical language (such as the language of real analysis) in sufficient detail for it to be possible to assess the validity of the argument $N \therefore \neg E$, then its validity could have been discovered, though perhaps not appreciated, before Einstein.

Popper *loc.cit.* provided a simple proof of his assertion that '*there is an infinity of unforeseeable nontrivial statements belonging to the informative content of any theory*', but he did not specify the conditions under which the proof is valid. One corollary that he did not consider explicitly is that since what holds for a complex and wide-ranging theory must hold also for every one of its consequences (except logical truths), we may not be able to understand these consequences any better than we understand the theory itself (Miller 1998, §2.6, p.19). It is not just Newton's theory of gravitation that we can never fully understand, but singular statements such as 'The Moon is smaller than the Earth' (though this particular statement is not a consequence of Newton's theory, which is here assumed to be consistent). Like the peace of God, almost any theory you care to mention 'surpasses all understanding' (Holy Bible, New King James version, *Philippians* 4:7).

¹ Supporters of 'the hoary claim about deductive validity' do not deny that, although all valid arguments are circular, some are more patently (or immediately) circular than others are. There have been occasions in the history of mathematics when much work was needed to isolate the point or points at which, in a purported demonstration, a suspect axiom (such as the axiom of parallels or the axiom of choice) was silently called on. Kaye (2014) investigates the interesting contrast between the soundness theorem for elementary logic, which is rather obviously assumed in any valid proof of the soundness theorem that uses elementary logic, and the completeness theorem, whose precise role in the proof of the completeness theorem is unearthed only with some care.

In conclusion, it may be suggested that what Frederick's thesis boils down to is that the *available content* of a statement (which is in a constant state of flux) is seldom identical with its logical content (which is more or less fixed, at least if the object language is fixed). But this distinction is as trite as the distinction between a country and the part of that country that is accessible to a particular explorer at a particular time. I hope that there is more to it than that.

3.2 The debatability of logic

'Logic is just not a controversy-free zone', observes Williamson (2012). 'As in the rest of science, no principle is above challenge. Principles of logic can themselves be debated, and often are, just like principles of any other science.' He cites intuitionistic logic, quantum logic, and paraconsistent logic as domains in which principles dear to classical logic have been contested and rejected, and of course there are numerous other theatres of protest and dissent, notably in modal logic. But if we do not resort to logical reasoning or logical inference — in short, if we do not use principles of logic — we cannot argue rationally about principles of logic, but only squabble about them. From this truism Williamson infers that '[t]he conception of logic as a neutral umpire of debate fails to withstand scrutiny. Whichever side is right, logical theories are players in these debates, not neutral umpires.' We must, he says, reject the idea that

logic has no substantive content, for otherwise the correctness of that content could itself be debated, which would impugn the neutrality of logic. One way to develop this idea is by saying that logic supplies no information of its own, because the point of information is to rule out possibilities, whereas logic only rules out inconsistencies, which are not genuine possibilities. On this view, logic in itself is totally uninformative, although it may help us extract and handle non-logical information from other sources.

Williamson thinks that this doctrine of the uninformativeness of logic is mistaken, and goes on:

The power of logic becomes increasingly clear when we chain together such elementary steps into longer and longer chains of reasoning, and the idea of logic as uninformative becomes correspondingly less and less plausible. Mathematics provides the most striking examples, since all its theorems are ultimately derived from a few simple axioms by chains of logical reasoning, some of them hundreds of pages long, even though mathematicians usually don't bother to analyze their proofs into the most elementary steps.

He cites as an example of an informative mathematical discovery Wiles's proof of Fermat's Last Theorem, the conjecture that there exists no integer $m > 2$ for which the equation $x^m + y^m = z^m$ has a solution in the positive integers. He says that 'what matters is that together the accepted axioms suffice [to] imply Fermat's Last Theorem' and asks rhetorically 'If logic is uninformative, shouldn't it be uninformative to be told that the accepted axioms of mathematics imply Fermat's Last

Theorem? But that last statement is not, as it stands, 'a truth of pure logic', since the term 'the accepted axioms' is logically indeterminate. When a sufficient set of axioms is fully spelt out, we do obtain 'a truth of pure logic', but not a convincing example of a genuine discovery. Fermat himself knew that the conjecture is true (though he did not manage to exhibit a justification or proof), and before Wiles got to work on it, it had been extensively tested and never refuted. (That no counterexample has been found does not of course imply that it is true, and it may even be undecidable from any consistent set of arithmetical axioms so far proposed.) But this is a digression, and it cannot be pursued further.

Williamson takes the thesis that he initially considers, that logic is 'an umpire, a neutral arbitrator between opposing theories, imposing some basic rules on all sides in a dispute', to be false, and the thesis with which he ends, that 'logic is informative', to be true. To the extent that he has something new to say about the informativeness of logic (that is, something beyond the appeal to mathematical surprises, which is decidedly old hat), it is that it is a consequence of the true thesis, with which I fully agree, that *we can debate rationally the correctness of logical principles*, and in order to do so we must make use of logical principles. Where I disagree is with Williamson's assertion that *rational debate about logic is impossible if logic is neutral*. This seems to me to be a characteristic justificationist misapprehension of rationality.

According to critical rationalism, as I said above (and in many other places), the principal purpose of logic is to criticize and to falsify. A rational debate about a logical system typically consists of an attempt to show that the system contains a putative law or rule that is, in some sense, unsatisfactory, not that the system is valid. There are no logical means by which logical axioms and logical rules can be justified, and the history of philosophy is littered with failed attempts to construct such justifications. But errors can be detected. Russell's paradox is a famous example.¹ More generally, the rules embodied in a logical system can be directed against the system itself, and provided that it restricts its ambition remorselessly to self-denial and self-sacrifice, the system preserves its neutrality. 'No one should be a judge in his own case' (*Nemo iudex in causa sua*) is a legal principle that is adamantly enforced in many jurisdictions, but it does not prevent a judge with an interest in a case from voluntarily disqualifying himself, that is, from handing down a judgement that may be seriously detrimental to his interest. It is conceivable that, using classical logic, someone might demonstrate that a well thought-of classical principle, for example the rule of *reductio ad absurdum* or the rule of *modus tollens*, has a counterexample. If such a demonstration were to exist, it would not be circular (Miller 1994, Chapter 4, §3e; 2008, §4). It would use the rule of *reductio ad absurdum* to reduce the rule of *reductio ad absurdum* to absurdity, nothing more. I do not expect any such demonstration ever to emerge, but I do not pretend to prove

¹ Two less famous examples that are not trivial are the proof by Kleene & Rosser (1935) of the inconsistency of the system of postulates of Church (1932), and the criticism by Montague & Henkin (1956), notes 5f. and text, of the definition of the term *formal deduction* in Church (1942). There are of course many discussions of logical systems that are not themselves logical but combinatorial, for example proofs that classical sentential calculus based on the operations of conditional and negation can be axiomatized using only five distinct variables (Meredith 1953). Logic's neutrality is not compromised in any of these proofs.

that it is impossible. Pierre Boutroux may have been right to say that 'in order to combat logic it is necessary to use logic' (Marans *op.cit*), but his conclusion that '[I]logic is invincible' does not follow (which is not to say that it is not true).

In this discussion, it is taken for granted that the system or systems being referred to by the word 'logic' contain a rule that is something like the rule of *reductio ad absurdum*; that is, a rule that allows the rejection of one or more assumptions. Despite the protestations of Bunge (1987), §6, most, perhaps all, systems of paraconsistent logic fulfil this requirement. They may deny the universal validity of the law $h \wedge \neg h \vdash k$ of explosion, but they do admit some cases of it. A logical system that cannot, by some means or other, simulate *reductio ad absurdum* would be of no service to critics, and would be discarded for its methodological, as much as for its logical, failings.

3.3 Science and technology

As a parting shot, it may be remarked that many who discuss technological, rather than scientific, innovation, take a view directly contrary to that defended here. That the world is full of wonderful, and sometimes less wonderful, technological surprises is rightly recognized, but technology is often belittled as mere applied science, as no more than the working out of the deductive consequences of our best tested scientific theories. It is nothing of the kind. What successful technological advances depend on is the imaginative realization of previously un contemplated initial conditions, and these genuinely do go beyond the logical content of theoretical science (Miller 1998, §3; 2006, Chapter 5, §3; Petroski 2010). Could it be that it was the mistaken idea that in technology deduction can generate novelty that emboldened the mistaken, but differently mistaken, idea that in science novelty can be generated by deduction?

4 Disjunctions

4.0 Another line of criticism

In §3 of Chapter 10 of (1963) Popper proposed to partition the logical content $Cn(h)$ of a statement or theory h into the set of its true consequences, which he called its *truth content* and the set of its false consequences, which he called its *falsity content*. It is easily seen that truth contents are always logical contents, but only empty falsity contents are logical contents (and then only if we adopt the convention that $Cn(\top) = \emptyset$). He went on to define the comparative *verisimilitude* of two theories h and k in terms of these subsets of $Cn(h)$ and $Cn(k)$. It is well known that this theory of verisimilitude is unsuccessful, though perhaps not as disastrous as it is usually represented to be (see Popper 1976b and also Fine 2018), and in the last 40 years or so there have been many attempts to do better. In one of the early ones, Schurz & Weingartner (1987) proposed to modify Popper's definition by replacing the truth and falsity contents of each statement by proper subsets of these sets, composed of what they called *relevant consequences*. This manoeuvre is noteworthy since it appears to be the first explicit challenge to the appropriateness in general, or the relevance (though not the validity), of the argument from h to $h \vee k$. 'For example,' they write (§3.2.1), 'if a physicist derives from his theory a sentence h which claims the future existence of a solar eclipse, he will

certainly not count sentences like " h or the sun will explode tomorrow" etc. as further consequences from his theory — since they are irrelevant'. Schurz & Weingartner do not deny that the argument from h to $h \vee k$ is valid, or that in most systems of logic, including most systems of relevance logic, it is authorized by the rule VI of disjunction introduction.

Similar opinions, often more strongly worded and seemingly of greater compass, have been articulated by others. Gemes (1994), §2, has noted that if we accept the thesis that the assertoric content of a statement includes the whole of its logical content, 'not only do Relativity theory and Newtonian mechanics share common content but also so do Relativity theory and your favorite crackpot theory, say, Dianetics'. A little later he said that 'the crucial point is that many of the needs of philosophers, especially philosophers of science, are better served by using a non-classical notion of consequence. In particular, we need a notion of consequence that does not automatically count $h \vee k$ as a consequence of h .'

Likewise, Mura (2008):28 (echoing Mura 1990:280), says that although¹

the basic dogma that the content of a proposition coincides with the set of its logical consequences sounds *prima facie* very natural from a logical point of view [, it has] some consequences that are, in my view, completely unacceptable (see also Gemes 1994). For example, this view entails that two propositions always share a common content, except when they are logically disjunct, i.e., when their disjunction is a logical truth. In fact, only in that case should two propositions have no factual logical consequence in common. So 'Napoleon was defeated at Waterloo' and 'The population of Chicago amounted in 1990 to 2,783,726 inhabitants' would have a common content. This appears to be completely counterintuitive.

According to Yablo *loc.cit.*, who does not at this point offer any new argument, '*Snow is white* does not in any sense whatsoever share content with *Charlemagne was Holy Roman Emperor*'.

Since one of the main purposes, and main achievements, of scientific and philosophical investigation is to identify, criticize, and correct faulty intuitive judgements, which are usually just dressed-up prejudices, I am little moved by Mura's diagnosis, or by similar complaints of unintuitiveness that appear throughout Gemes *op.cit.* What matters is whether the judgements stand up to criticism. I shall argue that the judgement that $h \vee k$ is not always a part of the content of both h and k is one intuitive judgement that does not stand up very successfully to criticism.

¹ In (2008) Mura has another argument against the identification of assertoric content and logical content, provoked by the variety of functions that may be used to measure partial deducibility (the converse of the relation that he calls partial entailment), and their connection with measures of relative content. The argument is too technical to be examined here, but I do not doubt that the difficulty that Mura mentions can be satisfactorily resolved.

4.1 Material conditionals

The disjunction $h \vee k$ is logically equivalent, in classical logic (but not in some other systems, such as intuitionistic logic), to the material conditional $\neg h \rightarrow k$, and also of course to $\neg k \rightarrow h$. Does $\neg k \rightarrow h$ belong to the assertoric content of h ; that is, does h assert $\neg k \rightarrow h$? If we understand the material conditional (as I for many years taught students to understand it) as asserting h *under the condition* $\neg k$ (or h *in the circumstance* $\neg k$) and h as asserting h *under all conditions* (or h *in all circumstances*), the question becomes a special case of the question of whether the rule UI of universal instantiation can add anything to assertoric content; that is, whether there can be an instance of a universal generalization that it does not assert. In the case of the proposal of Schurz & Weingartner *op.cit.*, the answer to this question is negative: in §3.4 they list $\forall x Fx \rightarrow Fa$ among what they call the *relevant valid implications*. I do not know if the other authors mentioned are as explicit, but I should be surprised if anyone wishes to exclude the instance Fa from the assertoric content of the universal generalization $\forall x Fx$.

It should be noted, however, that in each of the examples quoted from the writings of Mura (2008) and of Yablo, at least one of the disjuncts in the offending disjunction ('Napoleon was defeated at Waterloo', 'Charlemagne was Holy Roman Emperor') is in the past tense. Now it could be questioned whether, if k is a statement in the past tense, the material conditional $\neg k \rightarrow h$ can fairly be read as h *under the condition* $\neg k$. Does *If Charlemagne was not Holy Roman Emperor, then snow is white* say the same as *Snow is white under the condition that Charlemagne was not Holy Roman Emperor*? Really, I do not know. Those who like to analyse conditionals in terms of possible worlds may have an easy answer to this question, but for the present discussion it seems to me not to be too important. A restriction to statements formulated in the present and future tenses is enough to show the frailty of the intuitions to which the authors quoted defer.

What I am trying to emphasize here is that no decent argument has been given against the inclusion of the disjunction $h \vee k$ in the assertoric content of both h and k . Intuitions (as Yablo *op.cit.*, §1.3, quoted below, seems to be prepared to admit) are not enough.

4.2 Partial truth

It seems appropriate, almost in conclusion, to call attention to a discussion that unwittingly shows what a linguistic and logical quagmire is entered when it is maintained that the assertoric content of a statement may exclude some consequences that can be obtained by the rule VI. Early in his book (2014), Yablo introduces the problem of partial truth in the following words (*loc.cit.*).

What is it for a hypothesis to be partly true? [footnote] Here is the naivest possible idea about this:

1 A hypothesis is partly true iff it has parts that are wholly true.

Now we must ask what is meant by *part* of a hypothesis. The naivest possible idea about part/whole as a relation on hypotheses is

2 One hypothesis is part of another iff it is implied by the other. [footnote]

The naivest possible idea about partial truth is on the right track, I think ... [b]ut the naivest possible idea about what it takes for h to include k is questionable.

A paradigm of inclusion is the relation that simple conjunctions bear to their conjuncts — the relation *Snow is white and expensive* bears, for example, to *Snow is white*. A paradigm of noninclusion is the relation disjuncts bear to disjunctions. *Snow is white* does not have *Snow is white or expensive* as a part. This is not predicted by (2).

You might say that paradigm case intuitions are a poor base for theory. But the intuitions here are systematic.

In support of this judgement, Yablo lists a number of other contexts in which, it is claimed, our intuitions dictate that a disjunction may not be a part of either of its disjuncts. It seems clear that this latter claim closely resembles the thesis whose truth this paper has been contesting.¹

The thesis that disjunctions are not normally parts of their disjuncts may be supposed — but this may be just my imagination — to apply to material conditionals too, since $h \rightarrow k$ is logically equivalent to $\neg h \vee k$; hence $h \rightarrow k$ is not a part of k , and therefore — but again this may be my imagination — not a part of $h \wedge k$. In any case, it evidently serves to prevent every conjunction of false statements from having a true part, that is, from being partly true. For $h \wedge k$ is logically equivalent to $h \wedge (h \rightarrow k)$, whose second conjunct is true if h and k are both false. (A similar point is made in the discussion in *op.cit.*, §8.3, of what Yablo calls the *horseshoe theory* of relative or surplus content.) The claim of the biconditional $h \leftrightarrow k$ to be a part of the conjunction $h \wedge k$ cannot be dismissed in quite the same way. The logical equivalence of $h \wedge k$ and $h \wedge (h \leftrightarrow k)$ is uncontroversial, and once again the second conjunct of the latter conjunction is true if h and k are both false.

¹ One of the contexts mentioned by Yablo is, or is very similar to, a celebrated conundrum in the logic of imperatives, the question whether the imperative *slip the letter into the letter-box!* implies the disjunction *slip the letter into the letter-box or burn it!* (Ross 1941, pp.61f.; the more common formulation is *post the letter!*). According to Yablo (*loc.cit.*), who does not mention Ross's paradox by name,

[o]rdering Smith to eat pork chops is ordering her to eat pork. Ordering her to eat pork is not ordering her to eat pork or human flesh, though eating pork or human flesh is no less implied by eating pork than is eating pork implied by eating pork chops. One commands (normally) the parts of what one commands, but not its implications more generally.

What, as far as I know, has not been adverted to in the discussions of Ross's paradox is the well known and pervasive ambiguity in everyday English of the particle *or*, which is obliged to perform as the translation of each of the Latin particles *vel* and *aut*. The former is represented in most systems of formal logic by the connective $\vee$, the *inclusive disjunction* of the items connected, while *aut*, which expresses the *exclusive disjunction* of the items connected, has no established symbolization; Δ , called *symmetric difference*, $\leftrightarrow$, the negation of the biconditional, and $\vee$ surmounted by the letter *e* (a composite symbol called *eevore* by Mary Cresswell), have all been used. If the connective *or* is read as the exclusive disjunction *aut*, then it is quite in order that *post the letter or burn it!* is not a consequence of *post the letter!* If *or* is read as the inclusive disjunction *vel*, then *post the letter or burn it!* says no more than does *If you do not burn the letter, then post it!* (Or perhaps more accurately, *bring it about that, in the event that you do not burn the letter, you post it!*). To the extent that this latter command is in idiomatic English, it does appear to be a consequence of *post the letter!* If the argument in the text is correct then, contrary to what Yablo asserts, an order to eat pork chops is, at the same time and in the same action, an order to eat pork or to eat human flesh.

I imagine that Yablo's response here would be to plead that when he says that '[a] paradigm of inclusion is the relation that simple conjuncts bear to their conjuncts', he intends the word 'simple' seriously, to mean something like *primitive*. The conditional *If snow is white, then it is expensive* and the biconditional *Snow is white iff it is expensive* are compound statements and, under the paradigm, do not qualify as parts of *Snow is white and expensive*. It is well known, however, that a language in which h and k are primitive is equivalent, for every logical purpose, to a language that differs from it only in having h and $h \leftrightarrow k$ instead as primitive. This is the simplest instance of the phenomenon of language dependence that was mentioned at the end of §0 above.

To deny the importance of language independence in logical investigations seems to me to be nothing short of a belief in word magic (to use a term of Isaac Levi's). It is discouraging that Chapter 11 of my (2006), which is devoted to rebutting a host of attempts to defend language-dependent theories of verisimilitude, has been so pointedly ignored by the main protagonists in this debate. Only Oddie, in his (2014) article in *The Stanford Encyclopedia of Philosophy*, and in his (2018) article in *The Oxford Handbook of Truth*, even mentions it, but he does not respond to it. It needs to be understood that even in colloquial language there is no sharp distinction between primitive and defined terms, and in science and in mathematics the situation is even starker (for one or two examples, see Miller & Taliga 2008). In other words, we cannot do without the possibility of reformulating in new vocabularies, in other words, and rarely entirely accurately, what it is that we are trying to say. That is how things are, and no amount of semantical sophistication should be allowed to conceal it. The only good answer to the much-posed question *What exactly do you mean?* is *I do not mean anything exactly, but please try to show me where what I said is mistaken*. If this is not obvious, try to say or write something interesting in a foreign language.

References

- Bar-Hillel, Y. & Carnap, R. (1954). Semantic Information. *The British Journal for the Philosophy of Science*, Vol. 4, pp.145–157.
- Bunge, M. A. (1987). Seven Desiderata for Rationality. In J. Agassi & I. C. Jarvie, editors, pp.5–15. *Rationality: The Critical View*. Dordrecht: Martinus Nijhoff Publishers.
- Carnap, R. & Bar-Hillel, Y. (1952). An Outline of a Theory of Semantic Information. Technical Report #247. Cambridge MA: Research Laboratory of Electronics, Massachusetts Institute of Technology. Reprinted in Part IV of Y. Bar-Hillel (1964). *Language and Information. Selected Essays on Their Theory and Application*. Reading MA: Addison-Wesley.
- Church, A. (1942). *Introduction to Mathematical Logic* I. Princeton University Press.
- Church, A. (1932). A Set of Postulates for the Foundation of Logic. *Annals of Mathematics* 33(2), 346–366.
- Fine, K. (2018). Some Remarks on Popper's Qualitative Criterion of Verisimilitude. *Erkenntnis*, 87(1), 213–236.
- Frederick, D. (2011). Deduction and Novelty. *The Reasoner*, 5(4), 56b–57b. Slightly expanded version made available by the author.
- Frederick, D. (2014). Deduction and Novelty Again. *The Reasoner*, 8(5), 51b–52b.
- Frederick, D. (2020). *Against the Philosophical Tide. Essays in Popperian Critical Rationalism*. Critias Publishing.
- Gemes, K. (1994). A New Theory of Content I: Basic Content. *Journal of Philosophical Logic* 23(6), 595–620.

- Hamilton, W. (1859–1860). *Lectures on Metaphysics and Logic*, Vol. III. Edited by H. L. Mansel & J. Veitch. W. Blackwood and Sons. <https://babel.hathitrust.org/cgi/pt?id=uc2.ark:/13960/t3707z04z;view=1up;seq=62>
- Kaye, R. W. (2014). Circularity in Soundness and Completeness. *The Bulletin of Symbolic Logic*, 20(1), 24–38.
- Kleene, S. C. & Rosser, J. B. (1935). The Inconsistency of Certain Formal Logics. *Annals of Mathematics*, 36(3), 630–636.
- Marans, D. (2018). *Logic Gallery*. 8th edition. Morrisville NC: Lulu Press, Inc. Electronic edition continually updated on line at <https://archive.org/details/logic-gallery>
- Meredith, C. A. (1953). Single axioms for the systems (C, N), (C, 0), and (A, N) of the two-valued propositional calculus. *Journal of Computing Systems*, 1(3), 155–164.
- Mill, J. S. (1843). *A System of Logic, Ratiocinative and Inductive*. Longmans, Green & Co. Ltd. 8th ed. 1882.
- Miller, D. W. (2005). Do We Reason When We Think We Reason, or Do We Think? *Learning for Democracy*, 1(3), 57–71. <http://www.warwick.ac.uk/go/dwmiller/lfd-.pdf>
- Miller, D. W. & Taliga, M. (2008). Through A Glass Darkly. A Final Rejoinder to Raclavský. *Organon F* (Bratislava) 15(4) 473–476. <http://www.klemens.sav.sk/fiusav/doc/organon/2008/4/473–476.pdf>
- Miller, D. W. (1994). *Critical Rationalism. A Restatement and Defense*. Open Court Publishing Company. Electronic edition 2015.
- Miller, D. W. (1995). À quoi sert la logique?. *Hermès*, 15, pp.291–300. French translation by A. Boyer of 'What Is Logic For?' (Unpublished).
- Miller, D. W. (1998). Is Scientific Knowledge an Inexhaustible Economic Resource? *The Critical Rationalist* 3, 1, 17. iv. <http://www.eeng.dcu.ie/~tkpw/tcr/volume-03/number-01>
- Miller, D. W. (2006). *Out of Error. Further Essays on Critical Rationalism*. Ashgate Publishing Company. Paperback and electronic editions (2017). Routledge.
- Miller, D. W. (2008). Overcoming the Justificationist Addiction. *Iranian Journal of Philosophical Investigations* 4(11), 167–182. <http://wuwr.pl/spwr/article/view/5234/4917>. Persian translation by A. Paya. 'Ghalabeh bar E'tiyād beh Movajjah Sāzī'. *Baharestan* ([Iranian Academy of Science] 5, 2019, pp. 145–158 [the journal has now been renamed *Nameh Farhangestan-e Ulum*]).
- Miller, D. W. (2014). Some Hard Questions for Critical Rationalism. *Discusiones Filosóficas*, 15(24) 15–40. <http://www.scielo.org.co/pdf/difil/v15n24/v15n24a02.pdf>
- Miller, D. W. (2015). Errando el blanco. La desdichada historia de las críticas al falsacionismo. In R. López O., C. Verdugo S. & B. Bevensee B., editors, pp. 89–125. *El legado de Karl Popper (1902–1994). Reflexiones a 20 años de su muerte*. Instituto de Filosofía, Universidad de Valparaíso. Updated English translation at: <http://www.warwick.ac.uk/go/dwmiller/uvtext.pdf>
- Minto, W. (1893). *Logic, Inductive and Deductive*. John Murray.
- Montague, R. M. & Henkin, L. A. (1956). On the Definition of “Formal Deduction”. *The Journal of Symbolic Logic*, 21(2), 129–136.
- Mura, A. M. (1990). When probabilistic support is inductive. *Philosophy of Science*, 57(2), 278–289.
- Mura, A. M. (2008). Can Logical Probability Be Viewed as a Measure of Degrees of Partial Entailment?. *Logic & Philosophy of Science*, VI(1), 25–33. http://www.academia.edu/26156970/Can_Logical_Probability_Be_Viewed_as_a_Measure_of_Partial_Entailment?
- Oddie, G. J. (2014). Truthlikeness. In E. N. Zalta, editor (2016). *The Stanford Encyclopedia of Philosophy* (Winter 2016 Edition). <https://plato.stanford.edu/archives/win2016/entries/truthlikeness/>
- Oddie, G. J. (2018). Truth and Truthlikeness. In M. Glanzberg, ed., pp. 625–647. *The Oxford Handbook of Truth*, Oxford University Press.
- Petroski, H. (2010). *The Essential Engineer. Why Science Alone Will Not Solve Our Global Problems*. Alfred A. Knopf.

-
- Popper, K. R. & Miller, D. W. (1983). A Proof of the Impossibility of Inductive Probability. *Nature* 302, 21.iv.1983, pp. 687f.
- Popper, K. R. (1934). *Logik der Forschung*. Julius Springer Verlag. English translation, Popper (1959). *The Logic of Scientific Discovery*. Hutchinson.
- Popper, K. R. (1957). Philosophy of Science: A Personal Report. In C. A. Mace, ed. (1957), pp. 155–191. *British Philosophy in the Mid-Century*. George Allen & Unwin Ltd. Reprinted as Chapter 1 of Popper (1963).
- Popper, K. R. (1962). Die Logik der Sozialwissenschaften. *Kölner Zeitschrift für Soziologie und Sozialpsychologie* 14(2), 233–248. English translation: Popper (1994), Chapter 5.
- Popper, K. R. (1963). *Conjectures and Refutations*. 5th edition 1989. Routledge & Kegan Paul.
- Popper, K. R. (1972). *Objective Knowledge*. 2nd edition 1979, Clarendon Press.
- Popper, K. R. (1976a). *Unended Quest. An Intellectual Autobiography*. Routledge Classics edition. Routledge (2002). Originally published in P. A. Schilpp, ed. (1974), pp.1–181. *The Philosophy of Karl Popper*. Open Court Publishing Company.
- Popper, K. R. (1976b). A Note on Verisimilitude. *The British Journal for the Philosophy of Science*, 27(2), 147–159.
- Popper, K. R. (1994). *In Search of a Better World*. Routledge.
- Ross, A. (1941). Imperatives and Logic. *Theoria*, 7(1), 53–71.
- Schurz, G. & Weingartner, P. (1987). Verisimilitude Defined by Relevant Consequence-Elements. In T. A. F. Kuipers, ed. (1987), pp. 47–77, *What Is Closer-to-the-Truth?* Rodopi.
- Williamson, T. (2012). Logic and Neutrality. *Opinionator. The New York Times*. The Stone, 13. <https://opinionator.blogs.nytimes.com/2012/05/13/logic-and-neutrality/>
- Yablo, S. (2014). *Aboutness*. Princeton University Press.

Is Falsifiability a ‘Blunt Instrument’ for Modern Physics?

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Modern (theoretical) physics seems to be in deep crisis today as many of its core aspects are not empirically well-confirmed. Heated exchanges among physicists on the scientific status of physical theories with little or, at best, a tenuous connection to possible experimental tests is highly visible in the popular scientific literature. Some physicists (e.g., Carroll 2014, 2019; Ijjas et al., 2017) argue that science must discard empirical testability as one of its defining properties and the highly explanatory theories of present-day physics should be exempted from experimental testing, while others (e.g., Ellis & Silk 2014) spot in these arguments (for softening the testability or falsifiability requirement for modern physics) a dangerous tendency to undermine science. The philosopher of science who naturally draws most attention in these current debates is Karl Popper (1902-1994). His views, however, are often misrepresented in these debates. The prime objective of this paper is to explain how a more enlightened perspective on the ongoing debates can be obtained by a careful scrutiny of the Popperian criterion of falsifiability. As a first step in achieving this objective we will analyze the two major (conceptual) failures on which the current controversies rest. Our next step will be examining the controversial string theory to see whether the criteria of falsifiability is a ‘blunt instrument’ for determining its scientific status.

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Introduction

Modern (theoretical) physics is facing a serious crisis today as many of its core aspects seem anything but empirically well-confirmed. Heated conversations among physicists on the scientific status of theories with a tenuous connection to possible experimental tests are highly visible in the popular scientific literature. For example, three prominent cosmologists, Anna Ijjas, Paul Steinhardt and Abraham Loeb, argue in the February 2017 issue of *Scientific American* that inflationary cosmology— the long-favoured model for the early universe— has no data to support it and it has gone through so many patch-ups that no experiment can ever disprove it. Interestingly, although inflationary cosmology seems untestable, these cosmologists refuse to abandon it. Instead, they propose that science must change by discarding one of its defining properties, namely, “empirical testability” (Ijjas et al., 2017: 39). In contrast, Alan Guth (2017), one of the originators of inflationary cosmology, together with thirty-two equally prominent other signatories (including five Nobel laureates) express categorical disagreement with the view that inflationary cosmology is beyond testability and draw attention to the impressive empirical success of the standard inflationary models.

Such heated exchanges are not only limited to inflationary cosmology. Particle physicist Hossenfelder (2017) is sceptical about the value of theoretical particle physics. She admits openly that “... we produce a huge number of new theories and yet none of them is ever empirically confirmed. Let’s call it the overproduction crisis. We use the approved methods of our field, see they don’t work, but don’t draw consequences..., we repeat ourselves over and over again, expecting different results...” (Hossenfelder 2017: 316). However, instead of indiscriminately dismissing all this research as useless she observes that “...in the absence of good quality measures the ideas that catch on are the most fruitful ones, even though there is no evidence that a theory’s fruitfulness correlates with its correctness” (Hossenfelder 2017: 316).

The crisis in modern physics seems to manifest itself most markedly in debates on string theory. Whereas some critics of string theory point to its cosmologies as stark examples of fact-free physics, high-energy theorists Herman Verlinde and Nima Arkhoni-Hamed, argue that fundamental physics and string theory are all about finding the “...Truth with capital T.”¹ The current debate about the scientific status of theories with questionable links to experimental tests has motivated certain physicists to turn to the history and philosophy of science. String theorist David Gross, for instance, agrees with philosopher Richard Dawid (2019) on the point that string theory necessitates a novel understanding of scientific rationality— an understanding in which progress can be attained on the basis of theory alone.² Cosmologist Sean Carroll (2014; 2019), too, is of the opinion that the criteria for scientific theory-assessment should be weakened as empirical testing of the core hypotheses of modern (theoretical) physics is very difficult to achieve. What is

¹ Nima Arkani-Hamed, quoted in Blom and Wessel (2017).

² David Gross extensively discussed and endorsed Dawid at the 2014 Strings conference in Princeton in his plenary lecture (27 June, 2014, Princeton University) in response to criticism that string theory lacks empirical connections.

more, dismissing the Popperian criterion of falsifiability as a ‘blunt instrument’ (Carroll 2014) Carroll (2014; 2019) argues for an exemption of such highly elegant and explanatory theories of present-day physics from experimental testing. Such proposals from leading contemporary scientists have reignited the controversies regarding the nature of science and the viability of its methodologies (that are not directly dependent on empirical evidence).

Cosmologists George Ellis and Joseph Silk, however, spot in these arguments for softening the testability requirement or weakening the need for empirical testing a dangerous tendency to undermine science. They (Ellis and Silk 2014) make it crystal clear that Popper’s criterion of testability (or falsifiability) needs to be (re)instated to demarcate proper cosmology from unwarranted theorizing because “...a theory must be falsifiable to be scientific” (Ellis and Silk 2014:321). The real issue at stake thus seems to concern the question of how serious the crisis of empirical testing in contemporary physics actually is. Quite unsurprisingly, Karl Popper (1902-1994) draws most attention (either as a friend or as a foe) in these current disputes on theory assessment and methodologies in science. His views, nevertheless, are often misrepresented in these debates. Several scholars who are sceptical about the plausibility of the Popperian criterion of falsifiability appear to have an impoverished notion of falsifiability.

The central objective of this paper is to explain how a more enlightened perspective on the ongoing debate can be obtained by a careful scrutiny of the Popperian criterion of falsifiability as a proposed solution to the problem of demarcation. The paper, divided into three main sections, attempts to achieve its objective firstly, by considering two major (conceptual) failures on which the current scientific-philosophical dialogue rests and secondly, by presenting a short case study of string theory to determine whether the Popperian criteria of falsifiability acts as a ‘blunt instrument’ for the assessment of its scientific status.

A major conceptual confusion provoking scholarly controversies is due to some scientists’ (and philosophers’) utter negligence to the Popperian thesis of two different senses of falsifiability, namely, the logical-technical sense of falsifiability– which Popper (1983) calls ‘falsifiability₁’– and the practical-experimental sense of falsifiability– which Popper (1983) calls ‘falsifiability₂’. As a result, these scholars tend to interpret the difficulties in obtaining conclusive empirical evidence for the theories of modern physics as a significant weakness of the proposed criterion of falsifiability. How the recent debates among physicists and philosophers rest on a conflated version of the two clearly different senses of falsifiability, viz., falsifiability₁ and falsifiability₂ (Popper 1983) is reviewed in the first section of this paper.

The other conceptual confusion, discussed in the second section of this paper, is due to the scholars’ obliviousness to the Popperian distinction between two different modes or methods of theory-evaluation or assessment, namely, justification and criticism. It is argued in this section that the worrying demand for abandoning experimental testing of the highly speculative theories of fundamental physics has been generated by confusing the justificatory process of theory-assessment with the characteristically different process of critical examination or criticism.

The third and final section of this paper considers one of the most compelling and controversial cases, namely, the string theory¹ in order to examine the plausibility of the Popperian criterion of falsifiability. It begins with a brief (and non-technical) overview of the origin and early developments of the string theory and proceeds to show how the key insights implied in Popper’s arguments are still being grossly misinterpreted. The paper concludes by commenting on whether or not the Popperian criterion of falsifiability acts as a ‘blunt instrument’ for dealing with the controversies regarding the scientific status of string theory.

Section I: The Popperian Distinction between Falsifiability₁ and Falsifiability₂

Trouble has been brewing for a while in the community of fundamental physics. For, some “empirically unconfirmed or inconclusively confirmed” (Dawid 2019:1) theories of modern physics, have attained a high degree of trust among their exponents and de facto “treated as well-established theories” (Dawid 2019:1). Consequently, some leading physicists (e.g., Carroll 2014; 2019) are of the opinion that Popper’s arguments (and his proposed criterion of falsifiability) are of limited value in explaining what is at stake in the recent controversies about the status of such physical theories.

Popper’s (1935; 1963; 1983) proposal is that a theoretical system (say, a conjecture or a hypothesis) is to be considered as scientific *only if* it makes assertions which may clash with observations; in other words, a theoretical system is tested or critically examined by attempts to produce such clashes, i.e., by attempts to refute it. Thus, all real tests are attempted refutations. As testability is the same as refutability it too can be taken as a criterion of demarcation— a criterion proposed by Popper (1935; 1963) for addressing the practical problem of assessing theories and judging their claims. There are, of course, degrees of testability. Some conjectures or hypotheses expose themselves to possible refutations more boldly than others. Accordingly, there are well tested theories, hardly tested theories, and non-testable theories. To borrow Popper’s (1963/2013:256) own example, a theory, say T_1 , that offers precise numerical predictions about the splitting up of spectral lines of light emitted by atoms in magnetic fields of varying strength is evidently more exposed to experimental refutation than a theory, say T_2 , that merely predicts that a magnetic field influences the emission of light. As there are degrees of testability the criterion of demarcation obviously cannot be a very sharp one.²

Many scientific theories appear to originate in myths. Popper in his *Logic of Scientific Discovery* cites several examples of myths such as, atomism or the corpuscular theory of light which have eventually become most important for science. Take for instance, Copernicus’ idea of placing the sun rather than the earth in the center of the universe. In Popper’s (1963/2013:257) view, it was not the result of any new observations but of a new interpretation of old and well-known facts in

¹ For the purposes of this paper, I use the generic term “string theory” to refer to a broad family of related theories connected with the concept of cosmic strings.

² Popper has devoted a whole chapter in *The Logic of Scientific Discovery* to this topic.

light of Platonic and Neo-Platonic (semi-religious) ideas. This crucial idea can be traced back to the 6th book of Plato's *Republic*, where we can see that the sun plays the same role in the realm of visible things as does the idea of the good in the realm of ideas. Just as idea of the good is the highest in the hierarchy of Platonic ideas, the sun, which grants visible things their visibility, vitality, and growth, is the highest in the hierarchy of the visible things in nature. Now if the sun merited a divine status in the hierarchy of visible things, then the only appropriate place for such a star could be the center of the universe. The earth, therefore, is bound to revolve around the sun (Popper 1963/2013:253). It may be a slight exaggeration to say that only Platonic or Neo-Platonic ideas exerted an influence on Copernicus' new interpretation of observational data and shifting of the center of all motion from the earth to the sun. Interestingly enough, Copernicus followed the Arabic method in trigonometry instead of chords used by the Greek astronomers (Koyre/ 1973: 23-24). But there is no doubt that he learned Greek, read Plato and was greatly inspired by Neo-Platonic (and Pythagorean) insights (Koyre/ 1973: 21-24).

What's more important, myths may develop testable components, which in the course of investigation, become fruitful and important for science (Popper 1963). It might also happen that a certain statement belongs to science because it is testable, but its negation turns out to be untestable, and thus needs to be placed below the line of demarcation. The example cited by Popper (1963) is of Planck's formulation of the First Law of Thermodynamics in the form of a negation of an existential statement: *There does not exist any perpetual motion machine*. The corresponding existential statement '*There exists a perpetual motion machine*' would naturally belong below the line of demarcation (Popper 1963/2013:347).

In Popper's (1963) view, what makes a theoretical system admissible to the realm of science (or scientific knowledge) is its openness to tests (or to refutation), and not its conclusive verification or substantial empirical confirmation¹ (as many physicists and philosophers of science still assume). Miller (2006: 86) reiterates this point that "decisive or irrefragable refutation" is not necessary for Popper, but susceptibility to removal is. Only those hypotheses that are empirically refutable or falsifiable can count as scientific. If any of the conjectures (or theoretical systems) clashes with empirical evidence *only then* it is to be rejected (Popper 1963). By implication, then, for Popper, a conjecture or theoretical system may remain accepted until it clashes with and falsified or dislodged by experiential evidence. Importantly, such theories, by not being falsified, neither become partially justified nor become more probable. The epistemological status of all not-yet-refuted hypotheses remains equivalent (Miller 2006: 98); they are all highly imaginary guesses or bold speculations (neither derived from experience nor from any a priori first principles) open to criticism and refutation.

Given that a statement (a theory or a conjecture) has the status of belonging to the empirical sciences *if and only if* it is falsifiable, the next question would be: when is a theory or conjecture

¹ Hume taught us long ago that no amount of empirical evidence can ever suffice (logically) for even the most circumspect generalization.

falsifiable? Few scientists engaged in the current debates appear to be heedfully aware of the fact that falsifiability in the sense of Popper's demarcation criterion is a purely logical affair. It deals only with the logical structure of statements or of classes of statements and has nothing to do with the question of whether or not certain possible experimental results would be accepted as falsifications. A statement or theory is, according to Popper's (1983) criterion, falsifiable *if and only if* there exists at least one potential falsifier, i.e., at least one possible basic statement that conflicts with it logically.

Popper (1983) characterizes the class of basic statements in such a way that a basic statement describes a logically possible event of which it is logically possible that it might be observed. To borrow his own example, the statement "All swans are white" is falsifiable since it contradicts the following basic statement: 'On the 16th of May, 1934, a black swan stood between 10 and 11 o'clock in the morning in front of the statue of Empress Elizabeth in the Volksgarten in Vienna' (Popper 1983/2000: xx). What is not required here is that the basic statement in question must be true (Popper 1983/2000: xx).

In contrast, the widely-held hypothesis of psychological egoism— all human actions are egotistic, motivated by self-interest— variants of which may be found in behaviourism, psychoanalysis, utilitarianism, or in sociology of knowledge— is not falsifiable (Popper 1983/2000: xx). No example of an altruistic action can refute the claim that there was an egotistic motive hidden behind it. To borrow another example from Popper (1983/2000: xx-xxi): 'There is a ceremony whose exact performance forces the devil to appear.' Such a statement is also not falsifiable, though it is, in principle, verifiable. For, it is logically possible to find a ceremony whose performance leads to the appearance of a human-like form with horns and hooves. Even if a repetition of the ceremony fails to produce the same result there would be no falsification because anybody might argue that some unnoticed aspect of the exact performance of the ceremony has been omitted. Falsifiability in this logical sense (as shown by the above examples) signifies a logical relation between the theory (or hypothesis) in question and the class of basic statements, or the class of events described by them, that is, the potential falsifiers. Falsifiability is relative to these two classes: if one of these classes is given, then falsifiability is simply a logical matter. Falsifiability in this logical-technical sense is referred to by Popper (1983) as 'falsifiability₁'. It neither entails that a falsification can in practice be carried out, nor that, if it is carried out, it will be entirely unproblematic.

There is, however, a second sense of 'falsifiable' and 'falsifiability' which needs to be distinguished very clearly from the (above) logical-technical sense in order to avoid gross misunderstanding. The second sense of 'falsifiable' is that the theory (or hypothesis) in question can definitively or conclusively or demonstrably be falsified (Popper 1983/2000: xxi-xxii). While the first sense refers to the logical possibility of a falsification in principle, this second sense refers to a conclusive practical-experimental proof of falsity. One might here of course ask whether an actual falsification is ever so compelling that the theory (or hypothesis) in question be regarded as

falsified (and thus as false), or whether there isn't always a way out for saving the theory (or hypothesis) in question.

In the very first edition of *Logik der Forschung* (1935), and also in his earlier *Die beiden Grundprobleme der Erkenntnistheorie* (1979), composed during 1930-33, Popper states very clearly that it is impossible to prove (conclusively) that an empirical scientific theory is false. In this practical-experimental sense, which Popper (1983) calls 'falsifiability₂', scientific theories or hypotheses are not (conclusively) falsifiable. Popper (1935) argues further that every theoretical system can in various ways be protected from an empirical falsification. It is not at all difficult to find some way of evading falsification, as for example, by introducing ad hoc an auxiliary hypothesis (Popper 1935/2005: 19-20). As a result, no conclusive disproof of a theory (or hypothesis) can ever be produced and, more importantly, it is not necessary either because "...it is always possible to say that the experimental results are not reliable, or that the discrepancies which are asserted to exist between the experimental results and the theory are only apparent and that they will disappear with the advance of our understanding..." (Popper 1935/2005: 28).

Therefore, from Popper's perspective, a theory which is falsifiable in the former, i.e., logical-technical sense is never falsifiable in this latter practical-experimental sense. This key insight of Popper has gone largely unnoticed in the relevant literature. In his 1935 work we see Popper complainingly refers to the fact that he has been constantly misinterpreted as upholding a criterion based upon a doctrine of 'complete' or 'conclusive' falsifiability (Popper 1935/2005:28). That his views are still being misconstrued is evident in the following comments of Carroll (2014): "...Karl Popper famously suggested the criterion of 'falsifiability' – a theory is scientific if it makes clear predictions that can be *unambiguously falsified*..." (italics mine). The recent debates concerning the plausibility of the Popperian criterion of falsifiability (as is visible in popular science outlets) clearly rest on the failure of the scientists to differentiate between the logical-technical sense of falsifiability or 'falsifiability₁' and the practical-experimental sense of falsifiability or 'falsifiability₂'.

Let's look at the case cited by Popper (1983/2000: xxiii) of the falsification of J. J. Thomson's model of the atom, which led Ernest Rutherford to propose the nuclear model. In Thomson's model of the atom, the positive charge was distributed over the entire space which the atom occupied. Rutherford had accepted this model but the experiments of his students (namely, Hans Geiger and Ernest Marsden) showed that alpha particles which were shot on to a very thin piece of gold leaf were sometimes reflected from the gold leaf, instead of being only deflected. Although the reflected particles were quite rare— approximately one among twenty thousand— they occurred with statistical regularity. Rutherford described this event as the most incredible one of his life— almost as incredible as if you fired a fifteen-inch shell at a piece of tissue paper and it came back and hit you.

Even though the findings of Geiger and Marsden look incredible, Popper (1983/2000: xxiv) points out, it is not logically impossible that a shot from a giant cannon on to a piece of tissue paper is reflected by it even with a (regular) statistical probability of 1 in 20,000. One cannot, therefore,

argue for a strict disproof or conclusive refutation of Thomson's theory (according to which the atoms form a wall like tissue paper). Nevertheless, the said theory was eventually replaced or superseded by the nuclear model of Rutherford. This shows how (empirical) falsification of even a non-definitive character could play a significant role in the history of scientific investigation.

The scientists who accuse Popper for proposing a 'blunt' criterion of (conclusive) falsification and for ignoring the non-conclusiveness of the falsification of scientific theories are blind to this perfectly sharp, unambiguous distinction between falsifiability₁ and falsifiability₂. That's why the difficulties involved in a (conclusive) practical-experimental falsification appear as a weakness (or bluntness) of falsifiability per se— the Popperian criterion of demarcation. Any criticism assuming such an impoverished notion of falsifiability is, in effect, no useful criticism of falsifiability at all.

Relatedly, one of the standard objections (e.g., Lakatos 1978) against Popper is that very few episodes in the history of science actually conform to this Popperian pattern of bold conjectures and rigorous refutations. Popper's criterion of falsification, we need to remember, is a methodological proposal, not a thesis about the history of science. As Miller (2006:96) clarifies, it is a demand and not an empirical thesis or generalization that can be challenged or refuted by citing the scarcity of cases of falsifications in the history of science. All this would have been of little importance today had some prominent scientists not ignored the Popperian insights and argued for relaxing the need for empirical testability.

Section II: The Popperian distinction between the Method of Justification and the Method of Criticism

It is generally claimed that from a rational point of view, the choice between competing scientific (or mathematical or even metaphysical) beliefs or positions is arbitrary because it is logically impossible to act or decide on rational grounds when it comes to such choices. The sceptical argument based on this analysis is called the argument about the 'limits of rationality' or the 'boomerang argument' (Bartley 1964/1999:6). The argument is basically an interpretation of the fact that any view may be challenged with questions as 'how do you know'? or 'give me a reason' or 'prove it' or 'justify it'. Such traditional philosophical questions are authoritarian in structure in the sense that they all beg authoritarian answers. Questions like how do you know or justify your beliefs, or with what do you guarantee your opinions, necessarily call for authoritarian answers. No demand for a justification or guarantee can be met except by providing something authoritative, i.e., something unquestionable that does not need any justification.

When we try to address such challenges by citing further reasons (including those already under review), these reasons may be questioned in turn and so on forever. Usually, though not necessarily, in order to avoid such infinite regress, one adopts certain things like standards, criteria, ends or goals. However, if to defend a position rationally is to offer good reasons in justification of it, then none of these usually adopted halting points would be rationally defensible.

It is Popper who made us realize that philosophers should neither demand nor search for infallible intellectual authorities, but should instead try to develop a way of eliminating (intellectual) errors.

The process of reasoning, Popper (1963) argues, may provide criticism but it can never provide justification. The rational attitude thus consists wholly of openness to criticism as well as of appropriate responses to criticism. This general shift from the traditional, philosophical demand for authoritative justification to the demand for criticism is seen by Bartley (1964/1999: 21) as “a genuine innovation” in philosophy. Popper’s is the first non-justificational philosophy of criticism in the history of philosophy. No one before Popper has succeeded in separating the process of justification from that of criticism.

Most philosophical theories about the rational evaluation and criticism of competing views take it for granted that rational character and degree of rationality (i.e., all properties, measures, and tokens of intellectual value or merit), regardless of its nature, are properties that pass from premises to conclusion in the same manner as the property of truth through the relationship of logical deducibility (Bartley 1964/1999: 24-25). Generally, such theories about the assessment and criticism of competing views include (a) some more or less well-defined notion about the nature of whatever property (e.g., truth, probability, empirical character) is to be used in evaluating and criticizing, and (b) the assumption that this property, whatever its character, must be fully logically transmissible like truth and probability. Truth and probability are two of the very few characteristics that do happen to be transmissible from premises to conclusion through the deducibility relationship. Most other evaluational properties are not like them. Nevertheless, due to the profound influence of these two (evaluational) properties over early developments within the justificationist metacontext, it has been uncritically assumed that all other indicators of merit or intellectual respectability (regardless of their logical capabilities) inevitably share the transmissible capacity of truth and probability (Bartley 1964/1999: 26).

Take, for instance, testability as an evaluational property. Unlike truth, the measures of degree of testability are not logically transmissible from premises to conclusion. A hypothesis is testable or falsifiable by the falsification of any of its consequents, and therefore, a hypothesis must possess at least as high a degree of testability as any of its consequents. However, a hypothesis may have a higher degree of testability if, for example, it has other consequents independent of the first. Now, if a hypothesis can possess a higher degree of testability than its consequents, then its consequents do not inevitably inherit testability through the deducibility relationship (Bartley 1964/1999:25). A high-level, highly testable scientific hypothesis thus does not necessarily bequeath its degree of testability or falsifiability to the lower-level consequents it entails. What is worth noting, Popper’s concept of testability, which addresses the familiar problem of rationally assessing or criticizing competing theories, neither entails the deducibility assumption nor is even compatible with it. The process of testing, Popper (1963) teaches us, is, in principle, infinite. A refutation, according to Popper (1963), does not establish the falsity of a hypothesis or theory; rather it simply leads to the provisional rejection of the hypothesis because it appears to conflict with some other better tested hypothesis or theory. It is also important to note that the view or hypothesis that causes the refutation is itself open to criticism by the testing of its own consequences, and these in turn are criticisable, and so on forever. Our criticism, therefore, is never conclusive; just like the hypotheses

we are examining our critical arguments are themselves conjectural. Every falsification may, in its turn, be tested again. In contrast, justificational arguments, leading back to positive reasons, eventually reach reasons which themselves cannot be justified without entailing an infinite regress. The justificationist is thus forced to conclude that such reasons or ultimate presuppositions must in some sense be beyond argument, and, by implication, beyond criticism. According to Popper (1963), it is this uncritical reliance on positive reasons of the orthodox method of justification that poses a serious threat to the rational attitude.

Popper's (1963) method of criticism, i.e., the method of looking for falsifying instances or critical reasons to test a theory or hypothesis contrasts sharply with the traditional method of justification. In his later writings he (Popper 1983/2000: 20-21) explains how 'critical reasons' are to be differentiated from 'positive reasons.' Positive reasons (an appeal to observation, for instance) are offered "...with the intention of *justifying* a theory, or, in other words, of justifying the belief in its truth..." (Popper 1983/2000:20). However, justification—conclusive or inconclusive—is impossible. For, any argument (or positive reasons) put forward to justify, conclusively or inconclusively, the truth (or the acceptability) of a proposition is almost inevitably circular. That is why, Popper replaces "...the question whether we can produce valid reasons (positive reasons) in favour of the truth of a theory by the question whether we can produce valid reasons (critical reasons) against its being true, or against the truth of its competitors..." (Popper 1983/2000: 25).

Critical reasons consist in pointing out "... how, one theory has hitherto withstood criticism better than another..." (Popper 1983/2000:20). Such reasons, evidently, do not justify a theory, because "...the fact that one theory has so far withstood criticism better than another is no reason whatever for supposing that it is actually true..." (Popper 1983/2000: 20). Critical reasons are in no sense ultimate in Popper's view; they are conjectural, infinitely open to re-examination and reconsideration, but can be used to defend (not to justify¹) our preference for a theory. Such Popper (1983) emphasizes, do not prove that our "...preference is more than conjectural: we ought to give up our preference should new critical reasons speak against it, or should a promising new theory be proposed, demanding a renewal of the critical discussion..." (Popper 1983/2000: 20). Though the process of testing involving critical reasons is infinite, it doesn't lead to any infinite regress because its aim is not justify any hypothesis with conclusive reasons. This crucial Popperian insight that it is only the demand for proof or justification that generates an infinite regress has not been systematically followed up in the philosophical-scientific literature.

Extending Popper's thesis Miller (1994) defines a critical argument as one in which what is concluded contradicts what is assumed. Put differently, a critical argument can succeed even if it assumes what it seeks to refute. As there is no question of proving or justifying anything, no infinite regress is generated. This is the heart of the difference between justificational and critical arguments or between the method of justification and the method of criticism. An understanding

¹ Citing reasons for one's preferences may be seen as a method of justification in ordinary language. But it is obviously not the classical, philosophical method of justification that is discussed here.

of this (Popperian) distinction between what Miller (1994) calls a circular or question-begging justificational argument (*a petitio principii*) and a critical argument (*a reductio ad absurdum*) is never more valuable than when we are challenged by the problem of whether or not to abandon or to weaken the need for empirical testing in modern physics. The recent proposal for an exemption of highly speculative theories of modern physics from experimental testing depends on the assumption that theory assessment in science is basically a method of justifying our belief in the truth of such theories by means of some positive reasons. This clearly indicates the scientists' obliviousness to Popper's "genuine innovation" (Bartley 1964/1999: 21) that the method of justification can be replaced by the method of non-justificational assessment involving critical reasons, to be exact, reasons instrumental in defending (and not justifying) our preference for any scientific theory. Had the scientists been attentive to this dramatic transition from the various methods of justification to Popper's method of (non-justificational) criticism, they could have dealt with the current controversy about scientific theory assessment more advantageously.

Section III: Is Falsifiability a 'blunt instrument' for String Theory?

The present section attempts to examine the origin and early developments of the much-debated string theory in order to determine whether falsifiability acts as a 'blunt instrument' (Carroll 2014) for evaluation of its scientific status.

Let's first try to understand the basic idea of string theory— often described as a “work in progress” (Greene 2000:18; Schwarz 2000: 3) or a theory under development. In a nutshell, string theory describes the different species of elementary particles as various modes of vibrations of tiny strings. Many theoretical physicists are very excited about its potential for revealing an extraordinarily rich structure with many deep connections to various branches of fundamental mathematics and theoretical physics, while some (e.g., Weinberg 2015:14) are doubtful about its application to the empirical world.

One possible way to grasp the core idea of string theory is to review (albeit briefly) the evolution of scientific ideas about the microscopic structure of the universe during the last century. Historical evidence indicates that in Miletus, over a century before the time of Socrates, the ancient Greeks began to speculate about the fundamental substance of which the world is composed. The pre-Socratics, from Thales to Empedocles, appeared to have thought of the elements as undifferentiated substances, like water or air. A contrasting view, quite closer to modern understanding, was developed by Leucippus and his successor Democritus a little later (Weinberg 2015: 7). All matter, according to Leucippus and Democritus, consists of tiny, indivisible particles that they named atoms— “*uncuttable constituents*” in the truest sense of the ancient Greek (Green 2000:141; italics in original) – moving in empty space.

Scientists continue to hold in some form or other this atomic hypothesis implying the discreet or grained nature of matter for over two thousand years. The scientific accounts of the most fundamental units, obviously, have undergone several revisions. Let's consider the solar-system like atomic model developed by J.J. Thomson, E. Rutherford, N. Bohr and J. Chadwick in the early

1930s. The atoms, according to this model, instead of being the most elementary material constituent, consist of a nucleus, containing protons and neutrons, surrounded by a swarm of electrons. In 1968 when the experimenters at the Stanford Linear Accelerator Center, probed deeper into the microscopic complexity of matter with the help of more advanced technological instruments, they discovered that even protons and neutrons are not fundamental as each consists of three smaller particles, called *quarks*, which are of two kinds, namely, *up-quark* and *down-quark*. A proton consists of two up-quarks and one down-quarks, whereas a neutron consists of two down-quarks and one up-quark.

Meanwhile, a fourth kind of fundamental particle called *neutrino*— which rarely interact with other matter— was detected by Frederick Reines and Clyde Cowan in the mid-1950s after years of painstaking research. Another particle called a *muon*, which is identical to but 200 times heavier than electron, was spotted by physicists studying cosmic rays in the late 1930s. Using ever more powerful technology physicists themselves produced some particles through high-energy collisions which are not constituents of anything they typically encounter. Four more quarks, namely, charm, strange, bottom and top, two other particles with properties similar to the neutrino, namely, muon-neutrino and tau-neutrino, and another even “heavier cousin of electron” (Greene 2000: 8) called *tau* were found. What’s more, each of these particles has an anti-particle, i.e., a particle of identical mass but opposite in certain other respects, such as its electric charge. These particles are what Greene (2000:13) calls the “letters” of all matter, which like their linguistic counterparts are devoid of any internal sub-structure. In the words of theoretical physicist Ellis, “...there aren’t little subquarks sitting inside the quarks...” (Davies 2000:152). Interestingly, string theory describes quarks as extended objects, made of not any more fundamental constituents but of a little piece of string, the typical size of which, roughly, is something like 10^{-33} centimeters, i.e., one thousandth of one billionth of one billionth of the size of a nucleus (Davies 2000: 152).

The ‘Standard Model’— widely accepted in the community of the physicists— provides an extremely successful account of matter particles (e.g., quarks), force particles (e.g., photon) as well as a Higgs particles discovered at the LHC (the Large Hadron Collider) in 2012. This well-established Standard Model— a relativistic quantum field theory describing the strong nuclear, weak nuclear and electromagnetic forces— involves c (the speed of light as it appears in the equation $E = mc^2$) and h (Planck’s constant as it appears in the famous equation $E = hf$), but not gravity G (Newton’s constant in that famous force equation $F = GmM/r^2$). Hence, the unification of this Standard Model and General Relativity appears to be the most sought-after goal among the physicists who aspire for a unified understanding of fundamental forces and particles (in terms of compelling mathematical principles).

String theory presents an account very different from that upheld by the Standard Model. Michael Green— one of the originators of string theory— describes it as “radically different” (Davies 2000:123) from any of the earlier theories (e.g., Maxwell’s theory of electrodynamics, or general relativity or supergravity). All these former theories contain particles (photons, gravitons, quarks) which are point-like objects, having no internal structure, while string theory claims that if the

presumed point-particles (of the Standard Model) could be examined with even greater precision, (which means many orders of magnitude beyond our present technological capacity) each would be seen to be made of a single, tiny, oscillating loop of string moving through space (Greene 2000:141), which are not points at all but extended objects¹ (Davies 2000:123).

Apparently, string theory adds a new microscopic layer of a vibrating loop to the previously known scientific development from atoms through protons, neutrons, electron and quarks (Greene 2000:14). It complicates the picture further by claiming that the observed particle-properties are the manifestations of one and the same physical feature: the resonant patterns of vibration of fundamental loops of string. Each of the patterns of vibration of a string appears as a particle whose mass and force charges are determined by the string's oscillatory pattern. For example, the electron is a string vibrating in one way and the up-quark is a string vibrating in another way, and so on. The same idea applies to the forces of nature as well. The force-particles are also connected with particular patterns of string-vibration. In this way, everything, that is, all matter and all forces, is unified under the same rubric of microscopic string oscillations. String theorist Green's metaphorical expression is worth quoting here: "...Just as the different vibrational patterns of a violin string give rise to different musical notes, *the different vibrational patterns of a fundamental string give rise to different masses and force charges...* (italics as in original)" (Davies 2000:143).

Now, to understand why our present-day experiments are unable to investigate directly into the microscopic stringy nature of matter one should first inquire about the length of a typical string loop. It's about what scientists call 'the Planck length', i.e., about a hundred billion billion (10^{20}) times smaller than an atomic nucleus (Greene 2000:141). Even on the scale set by subatomic particles, strings are incredibly miniscule. It is indeed conceivable, in principle, that with the help of sufficiently powerful instruments (an immensely powerful accelerator, for instance) we could directly see this loopy structure inside particles. However, practically, to do experiments which probed energies of 10^{19} GeV— which is approximately ten million billion times more than the energies probed up to the late 1980s in the particle accelerators— the accelerator has to be some million billion times more powerful than any accelerator built till the end of the last century (Davies 2000: 153). The construction of such a powerful accelerator looks not only difficult but inexorably expensive.

The origins of string theory go back to the late 1960s when Gabrielle Veneziano (along with other researchers) were trying to understand various properties of the strong nuclear force emerged from high energy collisions in particle accelerators. This force holds protons and neutrons together inside the nucleus of an atom and also holds quarks and gluons together inside the neutron and proton. Veneziano noted that an esoteric formula devised for purely mathematical pursuits by renowned mathematician Leonhard Euler, popularly known as the Euler beta-function, could be employed for making some sense of the numerous properties of such strongly interacting particles

¹ There are intriguing hints in theoretical research that strings may have further sub-structure (Greene 2000:142).

in one fell swoop (Greene 2000: 137). Veneziano's model—describing the quantized motion of a string—was a dramatic departure from previous theoretical models of matter in terms of particles.

Euler's beta-function appeared to be a useful formula but it required an explanation. In 1970 the collaborative works of Yoichiro Nambu, Holger Nielsen and Leonard Susskind suggested that if one models elementary particles as little, vibrating, one-dimensional strings, then their nuclear interactions could be captured accurately by Euler's function. These researchers hypothesized further that if the pieces of strings were small enough, they would look like point-particles and consequently be consistent with experimental data. However, when high-energy experiments (in the early 1970s) penetrated more deeply into the sub-atomic world a number of predictions of the string-model seemed to be in direct conflict with experimental observations.

The point-particle quantum field theory of quantum chromodynamics (QCD) was being developed around that time. As a relativistic quantum theory of strong nuclear force based on point particles (quarks and gluons) it was quite consistent with the Standard Model. When this theory achieved overwhelming success in describing the strong force virtually every physicist, except a few dedicated researchers (e.g., John Schwarz), chose to abandon string theory, to be precise, the string-description of strong nuclear force. Moreover, string theory has various features such as extra dimensions and massless particles, none of which look appropriate for a hadron theory.

Two important implications of Popper's criterion of falsifiability are to be noted at this point. The first one concerns the judgements or decisions of most physicists to give up string theory in favour of the theory of quantum chromodynamics. The conflict between the predictions of the early string-model and the high-energy experimental results in the 1970s, on the one hand, and the experimental evidence found in favour of quantum chromodynamics (around the same time) on the other, are both crucial from Popper's point of view. What do such experimental results show? Such experimental reports, Popper would say, neither entail a conclusive refutation of the early string theory nor imply a guaranteed or conclusive acceptance of quantum chromodynamics. The Popperian argument one could draw from such empirical evidence is not that quantum chromodynamics should be preferred to early string theory, but that string theory (for the time being) should not be preferred to quantum chromodynamics.

The second implication (of Popperian falsifiability) is, the acceptance of quantum chromodynamics by a large number of researchers does not signify anything beyond considering the theory as worthy of further and rigorous scientific investigation. If "...acceptance is so understood...", as Miller (2006:125) explains, then only one can appreciate the key insight of falsifiability, namely, that scientific hypotheses can be accepted (i.e., conjectured) "...even if there is no experimental evidence in their favour..." (Miller 2006:125). No one disputes the fact that the early string model, despite appearing radically different from the previous physical theories, suggested or predicted something about the empirical world. Naturally, it had consequences that could, in some conceivable circumstances, expose themselves as false. In practice it could indeed be very difficult to discover the loopy structure inside particles (which require experiments probing energies of 10^{19} GeV), but at least in principle it is conceivable that the scientists could actually reveal these little

loops (Davies 2000: 153). It is this susceptibility to modification (or falsification¹) in the light of (conceivable) experiments that entitles the early string hypothesis for further scientific investigation (actually carried out by only a few scientists like Schwarz) in spite of not having adequate empirical support at the moment.

One of the crucial problems with string theory was that the theory contained configurations of vibrating string properties like those of gluons and, in addition, it contained some messenger-like particles (with no mass but two units of angular momentum) that did not correspond to anything in the experimental observations of strong nuclear processes (Davies 1988:70). Schwarz continued his research for almost a decade and after studying the puzzling messenger-like patterns of string vibration, he and his then collaborator Joel Scherk found that one of the massless particles in string theory has the right properties (zero mass and spin two) that quite precisely match those of the hypothesized quantum-mechanical (messenger) particle which carries the gravitational force—the graviton.² At accessible energies, the interactions of the string-theory-graviton appear to agree with the graviton in General Relativity. Massless string modes also include spin-one particles that behave like the particles that are responsible for the forces described by the Standard Model (namely, nuclear and electromagnetic). These facts led Schwarz and Scherk in 1974 to re-introduce string theory as a unified theory of all forces including gravity, not as a theory of hadrons (Schwarz 2000). This implied, in particular, that the typical size of a string L_s is close to the Planck length L_p , 20 orders of magnitude smaller than hadronic strings!

Schwarz and Scherk's 1974 proposal were largely ignored because at that time researchers who worked on General Relativity did not seem to interact much with particle physicists and particle physicists apparently felt no need for considering gravity (Schwarz 2000). Besides, prior attempts to construct a quantum version of General Relativity assuming point-like particles (quantum field theory) had given rise to nonsensical infinite results (such as, nonrenormalizable ultraviolet divergences). This means, as per Schwarz (2000), the theory is inconsistent and needs to be modified at short distances or high energies. By contrast, he and his collaborators already knew from their previous studies that string theory provides finite results (no ultraviolet divergences) and it does this by (a) giving up one of the basic assumptions of quantum field theory, namely, that elementary particles are mathematical points, and by (b) developing a quantum field theory of one-dimensional extended objects, called strings. Although there are very few consistent theories of this type, string theory shows great promise as a unified quantum theory of all fundamental forces including gravity (Schwarz 2000).

During the period from 1984 to 1985, Schwarz along with Michael Green were able to show that there are five distinct but consistent string theories, each of which requires spacetime

¹ For Popper, no falsification can be conclusive as all test statements are open to dispute. However, as Miller (2006) reminds us, to say that a falsification has not been done conclusively is not to mean that it has not been done carefully or adequately.

² Massless particles travel with the speed of light, c . The electromagnetic force is mediated by a massless spin-one particle, called the photon. The force can be either attractive or repulsive. The gravitational force is mediated by a massless spin-two particle, called the graviton. The force is always attractive.

supersymmetry in the ten dimensions— nine spatial dimensions plus time— (Schwarz 2000). In addition, more than a thousand research papers from across the world suggested how numerous features of the Standard Model emerged naturally from the grand theoretical structure of string theory (Greene 2000:139) and, how string theory could offer a more satisfying explanation (than is found in the Standard point-particle Model) for many of these features that had been painstakingly discovered over the course of decades of research. These developments, triggering the first superstring revolution, led many physicists to believe that string theory is a worthy area of research and it is well on its way to fulfilling its promise of being the ultimate unified theory.

Arguably, the most important feature of string theory concerns its incorporation of general relativity. Ordinary quantum field theory does not allow gravity to exist, while string theory necessitates it. It does get modified at very short distances and/or high energies but at ordinary distance and energies it is present in exactly the form proposed by Einstein. This, in Schwarz’s (2000:3) opinion, is very significant, because it arises within the framework of a consistent quantum theory. String theory thus could be seen as an attempt at reconciling the general relativity theory and the quantum theory by subsuming them into a broader theoretical framework.

But string theory still awaits an adequate formulation, and cannot yet provide a detailed description of how the Standard Model of elementary particles should emerge at low energies. Vibrating superstrings, multiple, folded, (extra) dimensions of spacetime, and other features of the theory are (so far) inaccessible to experimental tests. As noted, the typical size of the loop of string would be like one thousandth of one billionth of one billionth of the size of a nucleus (roughly). In order to detect this loop-structure inside particles experiments need to probe energies of 10^{19} GeV, some 10 million billion times more the energies achieved till the end of the last century (Davies 2000: 123). Such features— often alleged by the critics to be mere metaphysical speculations— naturally strengthens the impression that string theory is “...unsatisfactorily detached from empirical confirmation” (Dawid 2013:19).

One might, therefore, be curious to ask whether string theory involving such seemingly experimentally inaccessible features deserve to belong to the domain of science at all? Some recent philosophers of science (e.g., Dawid 2013; 2019) tend to highlight the role played by non-empirical criteria¹ in scientific theory assessment. What these scholars assume, consciously or unconsciously, is that the criterion of falsifiability doesn’t work in cases like string theory where either technology is not advanced enough to probe energies of 10^{19} GeV or where the theory is yet ‘a work in progress’. No matter how speculative and mathematically intricate the theory may appear to be, Popper would say, if it is in principle criticisable or testable, it deserves to be entertained, i.e., to be considered for further scientific examination. Those who are engaged in the highly visible debates over the scientific status of string theory— often dubbed as ‘The String Wars’ (Dardashti 2019:1) – seem quite unaware of Popper’s insightful analysis of two clearly different senses of falsifiability and of two distinct methods of theory assessment (in science).

¹ For a detailed discussion on string theory and non-empirical theory assessment see Dawid (2013).

Concluding Comments:

String theory appears to provide an interesting and promising framework for constructing an underlying theory that incorporates the Standard Model of particle physics and General Relativity. Scientists like Ellis (Davies 2000:166) thinks that it "...has arrived as a language to discuss fundamental physics, elementary particle physics and relativity physics", while Schwarz (2000) admits that despite much efforts and imaginative proposals, superstring theory is not yet formulated. The debate about whether it will remain forever beyond the possibility of experimental testing is still going on. Though extra dimensions may look problematic to many scholars, some (e.g., Kane 2019: 396) are hopeful that the curled-up dimensions contain lots of information indicating testable predictions for the compactified theories, particularly determining the forces and particles.

The present paper concludes by drawing attention to two points important for the present purposes. The first point concerns the popular assumption that string theory is most strongly criticised for resulting in a wide spectrum of speculative and (hitherto) empirically unconfirmed (or, in some cases may be empirically unconfirmable) new hypotheses. Quite the contrary, Feynman, whose scepticism towards string physics is all too well known, doesn't see any danger in making such bold guesses like nature at its deepest level is unified because "...if something is wrong, we check it against experiment, and experiment may tell us that it's not true..." (Davies 2000:193). The real problem with string theory, Feynman (Davies 2000:194-195) argues, is not that there are no experiments to lead the scientists. In fact, a large number of experimental facts—to be precise, some two dozen numbers associated with the masses of various particles such as quarks—has already been collected by the string theorists but no reasonably good explanations for those facts (say, an account of why are the masses of various particles what they are) hasn't yet been developed by them (Davies 2000: 195). Understandably, Feynman emphasizes more on the explanatory weakness of string theory than on its experimental inaccessibility. The bold speculation that there is some wonderful unifying principle may not be a mere, crazy guess, but Feynman (Davies 2000:196) argues that the statement that there should be some kind of unification bears no indication of what kind of unification the string theorists are proposing. Among the enormous number of possibilities any one (or none) might be right.

The second point relates to Popper's key contribution to the ongoing debate. References to Popper appear quite frequently in the popular scientific literature and in general philosophical discussions. His views, however, are often ignored or clumsily distorted in those debates. Consider one of the most recent works on the issue regarding the status of some fundamental theories of modern physics. The 2019 volume entitled "*Why Trust a Theory: Epistemology of Fundamental Physics*" (edited by Dardashti et.al.) begins with the observation that fundamental physics today faces increasing difficulty in finding "conclusive empirical confirmation of its theories... Some empirically unconfirmed or inconclusively confirmed theories in the field have nevertheless attained a high degree of trust among their exponents and are de facto treated as well-established

theories. String theory, cosmic inflation, and to a certain extent the multiverse are particularly noteworthy examples..." (Dardashti 2019: 1). That is why, it is argued in the volume, some leading physicists, philosophers and historians of science strongly feel the current state of physics necessitates a paradigm shift regarding the understanding of scientific theory assessment.

The question is: does anything like "conclusive empirical confirmation" of a scientific theory ever exist? Has it not been shown by Hume long ago that no amount of empirical evidence can ever be sufficient for confirming or justifying even the most circumspect generalization? Has it not been explained by Russell (1918) that no universal hypotheses can be conclusively verified, even in a finite universe because any claim to have inspected the whole universe is itself a statement of universal form. Has it not been clarified by Popper (1963) why no search for "conclusive empirical confirmation" for scientific theories can ever be successful? The answers to these questions are no longer awaited. Thus, the real issue at stake, when discussing the scientific status of string theory, is not whether non-empirical theory assessment should replace the Popperian criterion of falsifiability. To interpret the debate in such terms would be highly misleading. The relevant question is, can the scientists (and philosophers), from the Popperian methodological point of view (i.e., using his criterion of falsifiability) consider string theory (as a work-in-progress theory) worth pursuing? The answer that emerges from the above analysis is yes.

References

- Bartley, W. W. III. (1999). Rationality versus the Theory of Rationality. In *Critical Approaches to Science and Philosophy*, ed. M. Bunge, Transaction Publishers.
- Blom, T. & Wessel, M. (2017). Deze wetenschappers strijden tegen alternatieve feiten, *De Volkskrant*.
- Carroll, S. (2014). Edge essay: What scientific ideas are ready for retirement? Falsifiability. www.edge.org/response-detail/25322
- Carroll, S. (2019). Beyond Falsifiability: Normal Science in a Multiverse. In *Why Trust a Theory? Epistemology of Fundamental Physics*, ed. R. Dardashti et al. Cambridge University Press.
- Davies, P. C. W & Brown, J. (1988/2000). *Superstrings: A Theory of Everything?* Cambridge University Press (Canto).
- Dawid, R. (2013). *String Theory and the Scientific Method*. Cambridge University Press.
- Dawid, R. (2019). The Significance of Non-Empirical Confirmation in Fundamental Physics. In *Why Trust a Theory? Epistemology of Fundamental Physics*, ed. R. Dardashti et al. Cambridge University Press.
- Ellis, G. F. R (2019). Theory Confirmation and Multiverses. In *Why Trust a Theory? Epistemology of Fundamental Physics*, ed. R. Dardashti et al. Cambridge University Press.
- Ellis, G. F. R., & J. Silk. (2014). Scientific method: Defend the integrity of physics. *Nature*, Vol. 516: 321–3.
- Greene, B. (2000). *The Elegant Universe*. Vintage Books.
- Guth, A., et. al. (2017). A cosmic controversy, *Scientific American*, 316.
- Hossenfelder, S. (2017). Science needs Reason to be Trusted, *Nature Physics*, Vol. 13, 316-317.
- Ijjas, A., et. al. (2017). Pop goes the Universe, *Scientific American*, 32-39.
- Kane, G. L. (2019). String/M-Theories about Our World Are Testable in the Traditional Physics Way. In *Why Trust a Theory? Epistemology of Fundamental Physics*, ed. R. Dardashti et al. Cambridge University Press.
- Koyré, A. (1973). *The Astronomical Revolution*, Hermann.

-
- Lakatos, I. (1978). *The Methodology of Scientific Research Programmes*. Edited by J. Worrall & G. Currie. Cambridge University Press.
- Miller, D. (1985). *Popper Selections* (eds). Princeton University Press.
- Miller, D. (1994). *Critical Rationalism: A Restatement and Defence*, Open Court.
- Miller, D. (2006). *Out of Error*. Ashgate Publishing Limited.
- Popper, K. R. (1935/2005). *The Logic of Scientific Discovery*, Routledge.
- Popper, K. R. (1963/2013). *Conjectures and Refutations: The Growth of Scientific Knowledge*, Routledge & Kegan Paul.
- Popper, K. R. (1983). *Realism and the Aim of Science*. Routledge.
- Schwarz, J. H. (2000). *Introduction to Superstring Theory*. [arXiv: hep-ex/0008017v1](https://arxiv.org/abs/hep-ex/0008017v1) 9 August 2000.
- Weinberg, S. (2015). *To Explain the World*. Harper Perennial.



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Is It More Reasonable for a Critical Rationalist to Be non-Religious?*

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ABSTRACT

This paper argues that it is not reasonable for a critical rationalist to be a religious believer in the Abrahamic tradition. The argument is distinctive, in that it takes seriously the critical rationalist view that we should abandon ‘justificationist’ argument. What this means, is that the structure of argument then becomes a matter of offering theories as resolutions of problems, and then judging how they fare in the face of ongoing critical appraisal. The paper surveys issues in several areas, including God and what is good; homosexuality; mysticism; and messianic ideas. It argues that, unless the believer engages in intellectual retreat (something that is unacceptable for the critical rationalist), the problem-situation facing the believer appears to be so daunting that it would be unreasonable for them to hope that they can overcome it.

Keywords:

Popper; critical rationalism; religion; fallibility; theism; objective value; suffering; homosexuality; mysticism; eschatology.

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* This paper was written in the form of a debate with Professor Paya.

Part I: My initial statement

1. Introduction

Let me start by explaining what I will be arguing. In my view, a critical rationalist – an approach which Professor Paya and I share, and which I will shortly explain – can perfectly reasonably be religious. Professor Paya is, himself, a critical rationalist, is religious, and is a perfectly reasonable man. But I am going to argue that it is more reasonable to be non-religious. Why? Essentially, because the intellectual problems facing people in the Abrahamic tradition who are religious seem to me daunting:¹ I will argue that it is not reasonable to think that they can be overcome

2. Critical Rationalism

Critical rationalism² is a view which sees us as aiming at truth, but sees all our views as fallible. It downplays the significance of personal feelings of certainty: they may matter to us, but they don't tell us what is true. Rather, we need to learn from others: from their criticisms, and from tests which both we and they agree are telling ways of evaluating our views. While getting impressive empirical confirmations of our ideas may encourage us, as we learn from the history of science, such success does not allow us to validly conclude that we have reached the truth.

Critical rationalism also suggests that we should evaluate intellectual positions in the light of how they fare in debate over time.³ Clearly, if a particular view has not done too well – in a sense which I will explain – that does not mean that aspects of it may not, in fact, be correct. Someone who favoured such a view might find a way in which they can respond, creatively, to the problems that have been discovered about their viewpoint so far. But an objective evaluation of their situation might conclude that the prospects of their doing so are daunting. It is in this sense that a proponent taking up the heroic task of defending such a tradition might be judged unreasonable, in the sense that he would be taking on a task his prospects of success in which, look poor. One might, perhaps, suggest that there is a parallel here to my saying that, for my 75th birthday. I wish to climb Mount Everest. There are obvious problems about this: I am not a mountaineer; I am fat and unfit, and so on. It is not impossible that I could climb Everest, but it seems unreasonable to think that I would be successful! It is not a reasonable aim.

As I have indicated, a critical rationalist approach in my view involves an attempt to sum up – and to get agreement about – what the character of the debate about issues has amounted to, up to the present point. This is not something that any one scholar can expect to achieve in any field, on their

¹ I am concerned, here, with the Abrahamic tradition because it is shared background between Dr Paya and myself, and because I have an academic interest in it.

² I need hardly stress here that what could be said at the start of a short presentation is very limited in its scope. For a fuller discussion which brings out my own view of what might be made of this approach, see my 'The Logic of Scientific Discovery', in J. Shand (ed.), *Central Works of Philosophy: Volume 4: The Twentieth Century: Moore to Popper*, Chesham, Bucks: Acumen, January 2006: 262-86, and the ideas that I set out in my two sets of Zoom-based lectures on Popper and Critical Rationalism.

³ See, for an argument to this effect, Lecture 1 in Series 2 of my talks, where I develop this point with reference to Lakatos and Whewell, and suggest that it should – seen as part of a realist approach to metaphysics – be added explicitly to what one finds in Popper's own writings.

own. Let alone someone who – as I do here – attempts to address the Abrahamic tradition, as a whole.¹ I am acutely aware that, I am not a specialist in any aspect of any of the traditions involved. And as a non-Muslim writing for what may well be a predominantly Muslim audience, I may make terrible mistakes.² But I am all too aware of my fallibility, and would commend that we here follow Voltaire's advice, and forgive each other our follies.³

I believe that the path to truth lies through advancing views which we think may be correct, and then getting criticism from other people. Above all, the critical rationalist aims at truth. He or she thinks that their attempts to reach it are fallible, and that we depend, crucially, on learning from critical input from other people who have views different from our own. I thus hope that my errors be corrected and forgiven.⁴

The best that we can hope for, is that our empirical claims can withstand criticism and testing so far. Our non-empirical claims should be opened up to criticism, by way of indicating clearly what problems they are attempting to resolve,⁵ opening them up to serious criticism, and trying to show that they have withstood criticism so far. In each case, it is crucial to pay attention to how the debate has gone, so that we don't respond to difficulties by way of unacknowledged intellectual retreat

Outside of mathematics and logic, it is simply a mistake to think that we should be after 'proofs'.⁶ (And even there, these are fallible⁷.) Rather, our aim should be to try to argue that the ideas which we are advancing are cogent, are to be preferred to alternatives, and have so far been able to withstand serious criticism.

¹ I have here, deliberately, not gone into differences between the different traditions. It is worth noting that, intellectually, there are lots of overlaps and cross-fertilization, although Christianity has tended to put particular weight on matters of doctrine rather than practise.

² I should also apologise for any disrespect, which is not intended as such. But there is a risk that the impression of disrespect may be conveyed by the fact that I am writing in Western academic style, and also – in making a case against religious belief – I am of necessity raising issues that in themselves believers may feel are inappropriate.

³ See Voltaire, 'Toleration', in *A Pocket Philosophical Dictionary*, tr. John Fletcher, New York, Oxford University Press, 2021, p. 242.

⁴ But not forgotten, as keeping them in mind is, in my view, something that plays a key role in how we should try to evaluate what is offered to replace them.

⁵ Cf., on this, Popper's 'The Problem of the Irrefutability of Philosophical Theories' in his *Conjectures and Refutations*, London: Routledge, 1963.

⁶ What I have in mind here, is the large literature on 'proofs of the existence of God', which seems to me fundamentally mistaken. This is not to say that the literature does not contain important arguments. But putting things, in this context, in terms of 'proofs' seems to me to misrepresent what we should be arguing about.

⁷ I am far from being a specialist in this field, but it has seemed to me that issues raised by Imre Lakatos in his *Proofs and Refutations*, Cambridge: Cambridge University Press, 1976 and in the papers collected in the first part of his *Mathematics, science and epistemology*, Cambridge: Cambridge University Press, 1978, need to be taken into account more widely. See also, for a lot of interesting information about how Lakatos's work relates to a broader Hungarian tradition in the philosophy of mathematics, G. Kampis et al (eds) *Appraising Lakatos*, Dordrecht etc: Kluwer, 2002, for a lot of interesting information about how Lakatos's work relates to a broader Hungarian tradition in the philosophy of mathematics.

2. Problems: I will speak only about six out of many possible issues

Let me turn to the substance of this debate. I will raise some problems for the theist.

2.1 God and What is good

My first problem concerns the relationship between God and what is good. We tend to think that there is more to what is good and bad than just our personal tastes, or what our particular society happens to favour, or behaviour which happens to have been to the advantage of our species in its development.¹ But there is, I think, a problem facing all of us, as to how the gravity and significance that we wish to give to ethics, fits into what we know about the world. A theistic view might offer some reassurance that objective values are real: that they are part of the fabric of the world.² But theistic views typically do not tell us *how* values fit into the world (i.e. they do not help with this problem that faces all moral objectivists). Theistic views face problems of their own: E.g. Just what is the relationship between God and what is good? The issue here is:³ how do you steer a course between making God subservient to objectively existing values, and making values simply what God has decided – a bit like an arbitrary ruler might decide what the law is?

2.2 The Goodness of God

We take God, in the Abrahamic tradition, to be all-powerful, all-knowing and also good. There is a huge literature on how this relates to the problem of human and other suffering. Clearly, if the world is given a particular character, and people can act freely within it, this may produce difficult consequences, but these are not ones the existence of which poses particular philosophical problems about evil.⁴

What seem more of a problem are what one might say look like design faults – and ones which, over time, humans might be able to remedy. Consider, here, the terrible problems of cancer⁵ and of Alzheimer's disease, which we may hope, over time, to address (as well as many less dramatic problems). That they can in principle be addressed indicates that things don't *have* to be like this; but why, then, if God is both all-powerful and good, are they there? It seems to me woefully insufficient, to say: well, people need something to stimulate them; or problems to work on – just because of the difficulty of the problems, and the countless generations of suffering that will take

¹ See David McNaughton, *Moral Vision*, Blackwell, 1991, for an interesting defence of moral realism.

² But this reassurance is, of course, no stronger than is the case for theism!

³ This is, obviously, a kind of modern restatement of the Euthyphro argument. See, for slightly fuller discussion, my 'A Non-Religious Approach to Morality', *Viewpoint: Perspectives on Public Policy*, Issue 2, February-May 2010, pp. 29-33 and 47.

⁴ C. S. Lewis's *The Problem of Pain*, London: Bles, 1940, and *Miracles*, London: Bles, 1942, are well worth reading. One issue about the former, however, is that the Christian idea of the Fall of Man seems to have been an invention of St Paul's, rather than something that was found in that form in the Jewish tradition. On my understanding, it is not found in Islam, either. It is worth bearing in mind that it could be objected that not only is it morally problematic to blame people for things which are outwith their control (i.e. if 'ought implies can', then if we are fallen, it is not clear how we can be held culpable for the consequences of this), while the idea of the Fall also affecting the cosmos – and being responsible for imperfections in it, as we experience it – seems to suggest that the 'argument from design' then becomes problematic.

⁵ Which, of course, seems to be a single term referring to a variety of conditions.

place until they are resolved. If issues of this kind were within the power of any good parent to address in respect of their children, they would surely do so immediately, not say: the children might be able to deal with them when they grow up.¹

The problem for the theist, here, looks to me to be that if God is both good and all-powerful, why did he leave us facing various horrors? For the particular kinds of problems to which I have referred could on the face of it have been addressed *without* upsetting the fundamental order of things, or undermining our autonomy (as, after all, our own limited medical discoveries make clear, where we have been able to develop remedies).²

There might, of course, be some deep reason for all this. But as far as I can see, if this does exist, God in the Abrahamic tradition had not explained what it is – and this would seem to me to be another fault. After all, if humans have been able to understand – albeit imperfectly – deep issues about the structure of the world, why no indications as to why we are expected to live with what seem to be obvious design faults in creation?

2.3 Homosexuality³

On my understanding, this, on traditional views in the Abrahamic tradition, is condemned in dramatic terms. Some liberal Christians have tried to get round this; but those, it seems to me, with more intellectual integrity,⁴ say that people who are sexually attracted to members of their own sex, have no option but to be celibate, and to ask for support and fellowship from their co-religionists in trying to cope.⁵ The problem, as far as I can see, for the theist is that homosexual orientation seems to be either innate, or to be an involuntary product of certain social circumstances.

People who are homosexually orientated feel just the same way about some members of their own sex, as the rest of us do towards some members of the opposite sex. To the conservative-minded, one might say: one is not, here, dealing as one might with something that is a gratuitous indulgence in something perverse. Rather, it is something that plays a key role in people's orientation to others – and which could be the vehicle for deep love, affection and relationships that last over time, in the same kind of way as do those between heterosexual couples.

¹ It is, here, perhaps worth reminding the Christian that Matthew 10:29-31 says: 'Are not two sparrows sold for a penny? And not one of them will fall to the ground apart from your father. But even the hairs of your head are all numbered. Fear not, therefore; you are of more value than many sparrows.'

² I.e., to spell this out, the issues that I am raising are ones which take into account the kinds of arguments that Lewis, and other theists, have offered.

³ My discussion, here, just because I am involved in a debate with a friend who champions conservative moral views about these matters, will be concerned just with that strand of the argument about homosexuality.

⁴ The basis of my concern about liberal religious views will be made clearer later in the discussion. It is not their liberalism with which I am in disagreement so much as that their views seem to me in danger of amounting to degenerative problem shifts within the traditions that they represent.

⁵ Two useful books here, written by conservative evangelical Christians who are themselves attracted to members of their own sex, are Ed Shaw, *The Plausibility Problem*, Nottingham; IVP 2015 and especially Greg Johnson, *Still time to care*, Grand Rapids, MI: Zondervan, 2021.

The British – now American – writer Andrew Sullivan has offered a powerful, and basically conservative, argument for gay marriage.¹ He argues that it is better for all involved, if homosexuals can be in stable loving relationships which are socially recognised and re-enforced. The problem, here, with the Abrahamic tradition, is that we are offered a picture of an all-knowing God simply condemning people for orientations which, whether genetic or a social product, seem involuntary at the level of the individual, and cutting them off from some of the deepest aspects of human life.

2.4 Mysticism

Next, I'd like to say something brief about mysticism. I think that mystical experience is real, in the sense that similar phenomena have been described by many different individuals, and across different traditions. However, the problem about those in the Abrahamic faith invoking this in support of their views seems to me to be that what people experience is strongly influenced by the religious traditions in which they are operating. (It is striking that followers of Theosophy reported experiences of encounters with 'spiritual masters' whom the founder of Theosophy, Mrs Helena Blavatsky, turns out to have invented!) However, there is a lot reported by mystics within the Abrahamic traditions which seems more Pantheistic than should make those in these traditions feel happy. In addition, there are obviously Pantheistic reports from Hindus and Buddhists. In addition, many experiences which seem to fit pantheistic ideas, have been reported by people who are completely secular, but who have experimented with certain hallucinogenic drugs.²

All that I would want to argue, here, is that it seems to me that if someone wishes to claim mystical experience in support of their specific religious views, they need to offer us a cogent theory about the character of *all* these reports and their relation to reality, rather than just picking experiences that support their own favoured views and ignoring the rest. This I would take to be a standard application of a critical rationalist approach to empirical support, to these phenomena.

2.5 Messiahs and the End of the World

I can discuss this issue here only briefly. But that it seems to me that *all* speculation about Messiahs, and ideas about the immanent end of the world within the Abrahamic tradition, should be treated as an embarrassment, and dropped.³ There has been a history of almost endless such speculations, all of which have been wrong. They have disturbed people, and led them to do silly things. It is also interesting that those who wish to advance new such speculations, typically don't concern themselves with the pre-history of such ideas, explain what went wrong in the past, and explain why their ideas are better. And – in my view – they have distracted people from the important task

¹ See Andrew Sullivan, *Virtually Normal*, New York: Knopf, 1995. See also Andrew Sullivan (ed.) *Same-Sex Marriage: Pro and Con*, New York: Vintage, 1997, and Robert M. Baird and Stuart E. Rosenbaum (eds), *Same-Sex Marriage: The Moral and Legal Debate*, New York: Prometheus, 1997. Clearly, however, what is argued for here – e.g., by Sullivan – is something that he thinks it important should be available to gay people, rather than something that if it were available, would necessarily be expected to be the norm.

² This might, indeed, be apt to lead the non-theist (and non-pantheist!) to suggest that mystical experiences of this kind are, in fact, reports by individuals of their experiences when their brains are being disturbed in certain distinctive ways.

³ I have an unpublished paper which discusses this in relation to conservative Protestant Christianity.

of developing institutions and ethical codes which make for good behaviour in our changing concrete circumstances.¹

2.6 Theism and our Knowledge of the World

Finally, there is the problem of Abrahamic theism and our developing knowledge about the world. If the world is God's product, as the Abrahamic tradition tells us, then on the face of it, our revealed knowledge of this should surely offer us a programme for how it should be understood: a key to how the world actually is. But in the Christian Middle Ages, and on my understanding, in Islam, it was basically to classical Greek philosophy – Platonic, NeoPlatonic and Aristotelian – that religious people went for leads (i.e., not to their own religious ideas). While subsequent to the scientific revolution, huge – but fallible – strides have been made, making use of ideas which have no obvious link with the Abrahamic tradition, at all.²

If I am right that these are problems that have to be taken seriously, then scholars attracted to the Abrahamic tradition might try to respond to these issues: the options are open. But two tendencies, here, seem to me to be terrible.

The first is what I might call the ad hoc re-interpretation of one's tradition, in the face of failure,³ so as to claim that things which were initially understood literally, are, in fact, just to be understood as poetry or some kind of symbolism. Clearly, there is poetry and symbolism in all the Abrahamic traditions. And material may be open to many different levels of understanding. What, it seems to me, is problematic, is to retreat from what seem to be empirical, historical or metaphysical claims, simply in the face of the fact that they don't seem to be correct. It puts one on a par with a fortune teller, who simply dismisses all forecasts that they made which were wrong, as not really having been proper forecasts at all!

An alternative, is, also, to simply seek for parallels between odd aspects of contemporary science, and what is to be found in the Qur'an, or the Bible. This is typically done in an arbitrary manner. Alternatively, one might have what, in principle, is a serious agenda, like that of the proponents of 'intelligent design', in taking issue with Darwinian approaches in biology. The problem, here, is that in my view they don't take seriously what they would actually have to accomplish, to produce a genuine alternative to what they are criticizing. All told, here, my argument is for intellectual adventure: that the proponents of theism should say something

¹ I might add that what was clearly the expectation of a dramatic change in the world, which it would seem that Jesus expected in the very near future, seems to me to make totally futile those who wish to embrace the ethics of Jesus, while rejecting Christian theology. What one is to make of Christian theology, and the tenability of the kinds of views set out in the Church's early creeds, is an interesting matter (see, for a lively account of some of the issues, Geza Vermes, *Christian Beginnings*, London: Allen Lane, 2012). But on the face of it, a lot of Jesus's ethical injunctions would seem to make sense only if it could be expected that the Kingdom of God would arrive shortly, and disrupt day-to-day life.

² One issue, here, relates to objective indeterminism – and, for example, the kind of propensity theory that Popper has embraced.

³ Obviously, it would be a matter of historical argument as to whether this was, in fact, what was taking place.

interesting, which challenges current secular ideas, if they are to expect anyone to take them seriously.¹

Instead, my worry is that we will get more and more of what one has experienced within ‘liberal’ Christianity. I.e., a steady intellectual retreat from a religious approach which once made serious claims to knowledge about the world, about history, about theology and ethics, to a systematic shedding of any interesting claims about anything: a retreat into moral platitudes and into an echoing of the changing secular wisdom of the day. In contrast to this ‘conservative’ Christians simply fail to engage seriously with the intellectual challenges that have been offered of their views.²

The key issues facing the religious believer who is interested in intellectual issues look to me to be, first, to say something interesting to an increasingly secular world: to tell us what, in their view, things are actually like and then to explain how these claims of theirs are to be assessed. Second, to review the debates that have taken place over history, to see whether the traditions of which they are a part have been in intellectual retreat. And, third, to set out in the light of those debates what the problem-situation is that they face, and how they think that it should be addressed.

In my view, it is in the face of the sheer challenges of this that while the individual courage of religious scholars might be admirable, I think that their hope that they can meet this challenge is not a reasonable one. I thus think that there are real problems to be addressed. As, indeed, there are facing non-theists – who, in my view, tend also to duck them.³ It seems to me that on neither side can we expect that there will be knock-down answers. But – and this is why I take the view for which I have argued here – it seems to me that the problems facing the believer are particularly daunting. I can wish a believer who sets out to tackle them all the best. But the task before them looks to me so daunting that I don’t think that their hope of overcoming it is a reasonable one.

Accordingly, while I think that a clever and able man such as Professor Paya can be both a critical rationalist and a religious believer, I don’t think that it is *reasonable* for him to take this view, just because the problems facing him in dealing with such matters look so difficult that it is unreasonable to judge, in the current circumstances, that they can be overcome. His prospects look to me about on a par with my hopes of successfully climbing Mount Everest on my seventy fifth birthday!

¹ See, on this, my ‘Why the “Hopeless War”: Approaching Intelligent Design’, *Sophia*, 49, Issue 4 (2010), pp. 475ff. See also my ‘Steve Fuller and Intelligent Design’, *Philosophy of the Social Sciences*, September 2010, 40, pp. 433-45.

² This is not the place for an extensive discussion. But those who rest on a conservative and relatively literalist understanding of the Bible, might, for basic information, usefully look at John Barton’s *A History of the Bible*, London: Allen Lane, 2019, and James Barr’s *Escaping from Fundamentalism*, London: SCM, 1984. Catholics might look at Geza Vermes’s reports on Church pronouncements about research on the Bible, as reported in his *Providential Accidents*, London, SCM Press, 1998.

³ An obvious issue seems to me to be how we make sense of the kinds of accountability for – and thus responsibility for – our actions, that we regularly assume in our day-to-day lives, and what is to be made of the status of ethical claims. It is, I think, worth noting that most religious believers in the Abrahamic tradition will also be faced with the task of making sense of these, same, problems.

Part II: Response to Professor Paya

1. Introduction

I'd like to thank my friend Professor Paya very much for his interesting response to my opening statement. As both of us have noted, the issues with which we have been dealing have been widely debated, over many, many years. Accordingly, each of us is just touching the surface of the issues with which we are dealing. Further, from a critical rationalist perspective, a proper evaluation would involve reconstructing how the debate has gone, over history, and making our cases in the light of the problem-situation as we could agree that it should now be understood. This would be a mammoth task that could only be undertaken by teams of scholars. But let me, nonetheless, offer a brief response to what he had to say.

2. Evil, Pain and God

Here, I am afraid that I don't agree with how Professor Paya has tackled the problem. I wrote as I did with an eye to work which has been undertaken by some able Christian apologists – such as C. S. Lewis.¹ The issue which I highlighted takes for granted that there will be some unfortunate things that happen, simply as a consequence of the combination of human freedom, of the world having a certain structure, and God not intervening to protect us from the consequences of particular human actions. Rather, I raised the problem in terms of what I referred to as 'design faults'.

I had in mind things that cause terrible pain and destruction of the human personality – including, indeed, its capacities for worship, which don't seem to be products of deliberate human action. Further, they look as if they can be remedied (if one had the relevant knowledge and capacities) without this giving rise to systematic problems for the structure of the world. I referred to two fairly obvious examples: Alzheimer's Disease, and many kinds of cancer, just on the grounds that they are the kind of thing for which one can imagine humans, in due course, being able to design remedies, without this upsetting the structure of the world. However, there are many more, both serious and more trivial.

My claim, here, was that if God is claimed to be

- (i) all-powerful;
- (ii) all-knowing, and
- (iii) benevolent

It is simply not clear how one can avoid the kinds of things that I highlighted as constituting counter-examples to his existence (if these descriptions of him are correct²).

¹ See, for example, his *Miracles*, and *The Problem of Pain*.

² I know of some Christians who, in the face of this, have suggested that, perhaps, God's powers in respect of the material world are limited. But this seems to me a huge retreat from what, historically, was claimed for God.

3. Homosexuality

I think that to address this issue in terms of ‘non-conventional lifestyles’ (as Professor Paya did) is totally inadequate. The problem is constituted by people who find that they have exclusively same-sex attraction.¹ We are dealing here with issues which – whether there are genetic or developmental reasons behind them – are experienced by the individuals concerned as simply given. There have been elaborate efforts – both psychological and religious – to effect ‘cures’, but they are reported as having been unsuccessful. And this by people who would have the strongest personal and religious motivations to hope that they should be effective.²

We are given what are taken to be religious revelations, that such people should remain celibate (along with ideas about people being put to death for acting on the basis of such dispositions). Such ideas seem to be standard within all parts of the Abrahamic tradition as traditionally interpreted, but they seem to me to be terrible. I.e., given that it is known to God that, for one reason or another, people will be like this, to condemn such people not just to celibacy, but not to be able to enjoy the kinds of relationships that mean so much for our development as people – with their combination of love, sexual fulfilment and friendship – is dreadful. What is needed, is, surely, recognition of what people are actually like, and the encouragement of the development of institutions which, given that, will enable them to live the best kinds of lives. It was in this context that Sullivan argued the case for gay marriage.

4. Mysticism

First, I think that Professor Paya over-rates the role of individual experience in his account of critical rationalism. Our experiences doubtless matter a lot to us. But that I have a vivid experience of a particular kind is not, in itself, an indication that if I describe what I have experienced, the claim that I make will be correct.³ Rather, for the critical rationalist, our claims need to be inter-subjectively appraised, and our favoured theories assessed in relation to other competing theories. As I indicated in my initial statement, I think that, here, one needs to undertake a comparison with both experiences and theories from *other* religious traditions, and with the ideas of those who claim that what is taking place has, in fact, *no* religious significance at all. Talking just about our own tradition is not good enough.

5. What can we hope for?

I would be inclined to say that this life is all that we have. If there is some kind of an afterlife, the picture of it which was held in Classical Greece (and also among the Jews, before ideas about life after death came in) looks plausible (if not attractive). I.e., that we end up in something like a

¹ I need hardly say that there are many other possibilities. My concern, here, is with someone who is, say, a conservative (or observant) believer in one of the faiths in the Abrahamic tradition, but discovers themselves to have exclusively same-sex attraction.

² See on this Greg Johnson, *Still time to care*.

³ See, on this, Popper’s *Logic of Scientific Discovery*, London: Hutchinson, 1959, section 29.

celestial retirement home, in which the process of physical and mental crumbling continues, until there is nothing left of us.

I cannot make any sense of the idea of personal survival. We are people of our own times and have specific backgrounds. Our personalities and concerns are, very much, tied to this. Personal relationships are important to us. But they, equally, are tied to specific times and circumstances. The Catholic writer Ronald Knox reported¹ that Catholic theologians have speculated that, in the afterlife, we would all be 33 years old. We might, individually, then be at our best (but hardly our wisest). But how, then, could we relate to our parents or, if we have them, our children, if everyone is the same age?

Should the prospect of extinction in the very near future (e.g., by a comet) have any implications, in terms of our moral behaviour? I would think, not much. Clearly, there may be some utilitarian concerns which would no longer matter if we could be sure that the world would end very soon.² But issues about respecting other people and other creatures, and behaving with integrity, would in my view matter to the end. Moral behaviour of this kind, it seems to me, is something that should be undertaken for its own sake. And I don't see that the impending end of my life, or that of other people, should make the slightest difference to how we should behave.

Part III: Concluding reflections

1. Is belief in God a Consolation?

In his second response to me, Professor Paya raises three issues

1. Is a belief in a merciful, all-knowing, all-powerful God a consolation?

To this, my response is twofold.

(a) The key issue, here, would seem to me to be: are the claims made by those in the different branches of the Abrahamic tradition *true*?³

I have, in my contributions to this discussion, argued that while such claims might be true, it would seem to me unreasonable, in the face of the kinds of problems that I have raised, to think a telling case has been made that they are. I would add: to believe in things just because one thinks that if they were true, it would be nice, is what one would expect from the feeble-minded, but obviously not from someone of the calibre of Professor Paya. One should, surely, require that it is reasonable to hope that one's views could be true, or close to the truth. And in my view, in the face of the sorts of problems to which I have referred, the case against them being reasonable looks to me a tough one to meet.

(b) Second, is what is offered by the Abrahamic tradition something that, if it were true, should actually offer anyone consolation? In my view, the answer is: no. I have already argued that the

¹ In his *The Creed in Slow Motion*, London: Sheed & Ward, 1949.

² E.g., I would not, in that setting, be constrained any longer by, say, the consequences of emitting CO₂ for the Earth's climate.

³ It is worth noting that there are important incompatibilities between Christianity and Islam, which I will not discuss here, other than to remark that on my understanding while Jews traditionally took the view that if non-Jews obeyed the Noahide laws they would be OK, both Christians and Muslims took a dim view of the prospects of those who did not join them.

picture of a God who is all-powerful, omniscient and benign seems less than telling. Think, again, of the issues of terrible but avoidable disease, and the situation of homosexuals. If we were actually in the power of a being who considered what the Abrahamic tradition believes about such things to be good, I would consider it very, very bad news for us, not a consolation!

That being said, I have great respect for observant religious people in the Abrahamic traditions, and their moral behaviour. Their devotion to observance – including charity – and a disciplined moral life seems to me admirable. (This is, despite the fact that I have reservations about aspects of what is required as religious practise, concerning all three Abrahamic traditions.¹) I have great respect these people’s maintenance of the decencies of conservative moral practises in the face of the challenges of the modern world. I would be happy to live among them, and I would be happy to count them – if they would be willing - as my friends.

2. The Richness of the Religious Life

In my view, some of the greatest works of art and literature have indeed been religious in their inspiration. Mystical and other religious experiences mean a great deal to those who have had them.²

I, personally, think that some of the greatest works of music, are those from the Christian religious tradition. If I were asked to take recordings with me to a desert island – after the fashion of a popular BBC radio programme ‘Desert Island Discs’ – I would certainly include religious music, not least Verdi’s *Requiem* (his dramatic orchestral and choral treatment of the old-style Catholic Mass for the dead).

To appreciate properly such a work, in my view requires, *inter alia*, that one understand the theology involved in it.³ However, I can well believe that, for a devout Catholic, Verdi’s *Requiem* might have an aesthetic power that it could never have for me. But we can, after all, come to an understand something of what is involved, if one learns about other religious traditions, and, particularly, has the guidance of those who are involved in those traditions, to understand what

¹ There are aspects to both Jewish and Muslim requirements of ritual observance which seem ethically pointless. I have indicated that the Abrahamic tradition’s treatment of homosexuality seems to me gravely defective; more generally, it is not clear that there should be any particular restrictions on sexual behaviour, unless there are other moral reasons for them. While Christian ideas about getting rid of specific moral codes in favour of ‘love’ seem to me idiotic, because it is totally unclear what this amounts to.

² It turned out, from some remarks that Professor Paya made in the unstructured part of the discussion, that I had misunderstood the thrust of his concerns here, and that his particular concern was with the religious experience of a work of art for a believer. My concern with this, however, is as to whether, in his view, this would just apply to Muslims, in respect of Muslim works of art, and whether this itself rests on the idea that Islam is, itself, correct. I.e., consider a Roman Catholic’s religious experience when hearing Verdi’s *Requiem*. Is this included in what Professor Paya had in mind – considering that, for him as a Muslim, Catholicism is in many ways substantially false? Or is all that is required that someone **believe** that the religious views which inform a work of art are correct?

³ It is worth noting that it is not clear that Verdi himself was a religious man. The power of his work relates, in my view, to his making use of a rich religious tradition, rather than being related to his personal religious faith. (Compare, on this, Popper’s anti-expressionism in his writings on aesthetics, and also E. M. W. Tillyard and C. S. Lewis, *The Personal Heresy*, London: Oxford University Press, 1939.)

might be meant by things which feature within them. Muslims, if their understanding of Islam allowed them to learn about and listen to Verdi's *Requiem*, would, I believe, also find it superb.¹

Clearly, these aesthetic benefits are extras that someone who is a believer for other reasons may also get to enjoy. I think that we should all be taught what different religious views amount to, not least so that we can appreciate these cultural objects. Theology also seems to me really important,² and those who I believe incorrectly represent religion as being just about moral teachings, seem to me, in addition to being factually wrong, also to risk diminishing our understanding and appreciation of important religious works!

Indeed, a friend of mine who is a Methodist minister (a Protestant Christian) is now so theologically liberal that he thinks that the real content of Christianity amounts to: 'we should be kind to one another'.

As ethical sentiment, I think that this is admirable. As theology, it seems to me hopeless. And it is worth noting that, if it was what people are taught that Christianity amounts to, they would have no more of an understanding of the religious significance of Verdi's *Requiem*, than would an avowed atheist. I also wonder whether one can expect anything of aesthetic interest to come out of liberal religion.³ It should be said, however, a lot of material that has been produced by people who are of orthodox Christian belief, is aesthetically terrible.⁴

3. Justice and Life After Death

(a) Morality seems to me to be something that should be practised for its own sake.⁵ Indeed, any notion of reward or, indeed, of praise, seems to me inappropriate – other than for children, as part of their moral education. In my view, we need on-going appraisal from, and discussion with, others, to determine what is the right thing to do. But praise, reward and so on, for an adult, when they do what is right, seems to me demeaning. We do, however, need ongoing discussion about what good conduct amounts to, in changing social conditions. There also seems to me a need for discussion about issues concerning what else should be expected of everyone, and about supererogation⁶ – and its proper limits.

¹ I would also commend the very different 'Im Hashem Lo Yivneh Bayis' by the Shira Choir; a striking setting of material from the Psalms by a Hassidic Jewish choir: <https://www.youtube.com/watch?v=ckVYO9oI8vc>

² And also, a knowledge of what different things mean in the practise of religious life within different traditions. Compare, on this, Neal Robinson's *Discovering the Qur'an*, second edition, London: SCM, 2003.

³ It would seem to me a bit like trying to put the (British) *Guardian* – a newspaper of unremittingly liberal views, in the U.S. sense – to music.

⁴ Consider, here, the grotesque plaster statues of saints that used to adorn Catholic Churches, to some of the aesthetically grimmer hymns and 'choruses' in non-conformist Christianity.

⁵ I should also stress that I would see correct moral judgement as something that requires inter-subjective appraisal. In addition, I am not advocating some form of virtue ethics in which the object of moral action is, in some sense, one's self. Rather I'd take a key element of ethics to be the issue of moral patients and what one owes to them.

⁶ I should make it clear that this is not in the Catholic sense of accumulation of a store of good which can, then, be put to other purposes, but just about what is involved in doing more for others than can be reasonably required – and its proper limits.

All told, I don't see that life after death, or, indeed, God, has anything to contribute to morality, although it may be useful, at a practical level that some people refrain from terrible conduct because of religious-generated fears (though I would prefer that they believe what is true, even if we all have to suffer bad consequences from this!).

(b) As to punishment, I'd see three elements involved in this:

(i) First, its being something involved in a process of education concerning how we should behave towards one another. This can involve a public affirmation of what acceptable conduct would be, and the imposition of something like a penance for non-compliance.¹

(ii) Second, as trying to do our best to avoid people profiting from wrong-doing (e.g. by imposing fines, and improving our institutions).

(iii) Third, protecting ourselves and others from predators, including those who have no instinctive moral concerns. This, it seems to me, could in some cases involve imprisonment or indeed the imposition of a death penalty.

From my perspective, it seems to me important that we discuss, affirm and entrench institutionally what behaving well amounts to. But I am dubious about punishment, other than in the context of (i) – (iii). I think, say, that if people have done terrible things in their youth, then there is no point in punishment – beyond a kind of performance of a token penance – once they have become elderly. For they are in most respects a different person from what they were like when they committed the offence. Once they are dead, any notion of punishment seems to me pointless. Although it would seem important – if they seem to have got away with terrible behaviour – to explain what they did, and just why it was so bad, to those of us who are still alive.

References

- Baird, R. M. & Rosenbaum, S. E. (eds) (1997). *Same-Sex Marriage: The Moral and Legal Debate*, Prometheus.
- Barr, J. (1984). *Escaping from Fundamentalism*, SCM.
- Barton, J. (2019). *A History of the Bible*, Allen Lane.
- Fletcher, J. & Cronk, N. (2011). *A Pocket Philosophical Dictionary*, Voltaire, Oxford University Press, G. Kampis. L. Kwr: and M. Sloltzner (eds.) (2002) *Appraising Lakatos: Mathematics, Methodology and the Man*, Kluwer Academic Publishers.
- Knox, R. (1949). *The Creed in slow motion*, Sheed & Ward.
- Lakatos, I. (1976). *Proofs and Refutations*, Cambridge University Press.
- Lakatos, I. (1978). *Mathematics, science and epistemology*, Cambridge University Press.
- Lewis's, C. S. (1940). *The Problem of Pain*, Bles.
- McNaughton, D. (1991). *Moral Vision*, Blackwell.
- Popper, K. (1959). *Logic of Scientific Discovery*, section 29, Hutchinson.
- Popper, K. (1963). *Conjectures and Refutations*, Routledge.
- Robinson, N. (2003). *Discovering the Qur'an*, 2nd edition, SCM.
- Shand, J. (2006). *Central Works of Philosophy v4 Twentieth Century: Moore to Popper*, Taylor & Francis.
- Shearmur, J. (2010a). Why the "Hopeless War": Approaching Intelligent Design, *Sophia*, 49(4), 475ff, <https://philpapers.org/rec/SHEWTH>

¹ This seems to me to make sense of what is often seen as the retributive strand in punishment.

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- Shearmur, J. (2010b). Steve Fuller and Intelligent Design, *Philosophy of the Social Sciences* 40(3), 433-445, [https://philpapers.org/rec/SHE\\$FA-3](https://philpapers.org/rec/SHE$FA-3)
- Sullivan, A. (1995). *Virtually Normal*, Knopf.
- Sullivan, A. (ed.) (1997). *Same-Sex Marriage: Pro and Con*, Vintage.
- Tillyard, E. M. W. & Lewis, C. S. (1939). *The Personal Heresy*, Oxford University Press.
- Vermes, G. (1998). *Providential Accidents*, SCM Press.
- Vermes, G. (2012). *Christian Beginnings*, Allen Lane.

Is It More Reasonable for a Critical Rationalist to Be non-Religious? Belief and Unbelief in a Post-secular Era*

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ABSTRACT

In modern times many militant atheist thinkers and activists have tried to promote the idea that religions, as well as religious ways of life, are one of the main, if not *the* main source of evil in the social arena. Some other non-believer scholars, while taking a respectful approach towards religions and religious people, maintaining that it is more rational for people and communities to adopt a non-religious outlook on life and become members of the community of non-believers. In this paper, I do not take issue with the militant non-believers. The reason is that their approach to religion is so ideologically driven that it leaves not much room for proper rational discussions; it only invites some polemical replies. My aim here is, instead, to enter into a dialogue with those non-believer scholars who view religion in a measured and rational way. My intention is to critically assess the claims of this latter group of scholars and explain why, contrary to what they suggest, certain interpretations of religion, and in particular, the Islamic faith, can provide them with better alternatives than their atheist outlooks. The arguments of this paper are mostly in reply to the views expressed by Professor Shearmur in his paper on critical rationalism and religion.

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* This paper was written in the form of a debate with Professor Jeremy Shearmur.

Part I- Preliminaries

In the first part of my paper, I discuss some general themes whose function is to prepare the ground for tackling the main obstacles that hamper the appreciation of the ways in which religion is perceived and understood by a critical rationalist who is also a believer.

0- In Place of the Introduction

In the summer of 2022, the Islamic Cultural Centre for Northern California (ICCNC) invited Prof. Jeremy Shearmur and me to participate in an Oxford Style debate entitled “Is it more reasonable for a Critical Rationalist to be non-Religious?” Our debate was the first in a series of live discussions under the general rubric of “Belief and Unbelief in a Post-secular Era”.

In that meeting, Professor Shearmur defended a Yes answer to the main question of the debate while I tried to argue for a No answer. The following is based on my reply to Professor Shearmur in that meeting.

I would like to highlight Karl Popper’s answer concerning his approach to religion before producing my full-fledged answer. In an interview conducted by Edward Zerin, a Jewish Rabbi, concerning his [Popper’s] view about God, Popper made the following remarks, among others:

When I look at what I call the gift of life, I feel a gratitude which is in tune with some religious ideas of God. However, the moment I even speak of it, I am embarrassed that I may do something wrong to God in talking about God (Popper, 2008:48, 49, 51). I do think that all men, including myself, are religious (Popper, 2008: 49). Although I am not a Jew by religion, I have come to the conclusion that there is great wisdom in the Jewish commandment ‘not to take the name of God in vain’ (Popper, 2008: 48).

Popper’s highly reverential approach towards God and religion had impelled him to adopt an agnostic, and not a rejectionist, attitude with regard to God. I should like to argue that a critical rationalist can happily embrace religion and that it is a better option than either agnosticism or atheism.

However, since people use the term ‘religion’ equivocally, it is important to emphasise, at this juncture, that by religion, I do not mean what the likes of Daesh or Taleban in the Middle East or the white supremacists in the United States, or the militant Hindu in India, take as religion. I shall shortly present my own understanding of religion. Before that, however, I need to say a few words about Critical Rationalism.

1. On Critical Rationalism

Critical rationalism, as a philosophical doctrine (Popper, 1963/2002, Introduction; 1994/2000: Ch. 13), a way of life (Popper, 1963/2002:206, 2008: 200-201) and a critical intellectual perspective

which is against intellectual fashions (Popper 1994, *passim*), was originally suggested by Karl Popper¹ and further developed by his students and followers.² Its main mottos are as follows³:

Critical rationalism is a quest for knowledge and truth, for ‘emancipation through knowledge’ and ‘spiritual freedom (Popper 1963/2002: 175); The critical attitude ... seeks undogmatically to subject all attitudes, ideas, institutions, and traditions, along with ... knowledge and ... freedom, to critical examination and appraisal;⁴ [Critical] rationalists are those people who are ready to challenge and to criticise everything, including ... their own tradition (Popper, 1963/2002: 122).

On the basis of the above insights and in relation to a number of important epistemological problems with which he was grappling, including the problem of demarcation, which is about the nature of our knowledge claims and the problem of induction, which pertains to how we acquire knowledge (Miller 2006/2017), Popper developed an elaborate theoretical system whose main tenets included (though not exhausted by) the following theses⁵:

- * Realism (that there exists something, i.e., reality, not created by us) (Popper, 1983).
- * Human beings are capable of acquiring knowledge about (at least some aspects) of reality (Popper, 1963/2002; 1983).
- * All knowledge claims are conjectural (Popper, 1963/2002: 1983).
- * It is the growth of knowledge, and not knowledge per se, which is important in our epistemic quests and knowledge pursuits (Popper, 1963/2002:1983; 1979).
- * Knowledge pursuits begin when we encounter new problems. New problems emerge when our expectations of reality are shattered by reality itself.

The growth of knowledge is achieved through eliminating the errors of the conjectures produced by us as solutions to the problems reality presents to us. Popper has depicted this process by means of the following tetradic schemata:

$$P_1 \rightarrow TS \rightarrow EE \rightarrow P_2$$

¹ See the Bibliography for a Number of Popper’s books in which various tenets of critical rationalism are introduced and discussed as well as applied to a variety of intellectual problems.

² Some of the direct students/assistants of Popper are David Mille, Jeremy Shearmur, Ian Jarvi, William Bartley III, and Joseph Agassi. See the Bibliography of the work of some of these scholars.

³ All the points that follow are based on the work of Popper. Since Popper has discussed them in many of his publications, including Popper 1954/1966, 1963/2002, 1972/1979, 1994, and elsewhere, I refrain from referring to these titles in the case of the statements in the text for the sake of brevity.

⁴ Popper 1963/2002, 135, 151, 122, 127 ; 1945/1966, vol. II, 224–7.

⁵ The following is based on Paya 2018, Introduction.

(P₁ = Problem 1, TS = Tentative Solution, EE = Error Elimination, P₂ = Problem 2).¹

* To facilitate our knowledge pursuits, we identify and highlight three separates, though interrelated, realms in reality (R), namely, World₁ (W₁) (the physical universe), World₂ (W₂) (the subjective cognitive and emotive states of each individual) and World₃ (W₃) (an emergent and independent realm which is the outcome of the interaction between W₂ and W₁. It is the abode of all types of human constructs, knowledge claims, conventions and laws, artistic creations, value systems, and technological blueprints. It interacts with W₂ and, through it, with W₁).²

* Certainty belongs to the realm of personal psychology. It is not an epistemic value.

* Intuitions, flashes of insights, and moments of epiphany, which emerge in the course of grappling with genuine problems and play an important role in formulating our conjectures, belong to the ‘context of discovery’. This context is part of our personal psychology. Knowledge claims, proper, belong to the ‘context of assessment’.³

* Our repertoire of knowledge consists of two sets of knowledge claims: 1) the set of refuted conjectures and 2) the set of yet-to-be-refuted conjectures. The first set provides us knowledge *via negativa*. Its members tell us what is not the case with regard to reality. The second set, as long as its members remain corroborated, provides us knowledge *via positiva*. Its members tell us, in a conjectural and, of course, provisional manner, how we should conceive/understand reality (Miller 1994).

* The growth of knowledge is intimately related to the ethics of research: the dishonesty of researchers with respect to their knowledge claims could seriously hamper the growth of knowledge. (Popper, 1994: Ch. 6.)

* The future is open, and it is “our duty to remain optimists”. (Popper 1994)

2- On Religion⁴

I suggest, as a conjecture, that almost all religions, especially those that belong to the Abrahamic tradition, comprise two principal parts: an ontological-epistemological and a technological part.

The first part consists of the following two simple statements (Paya, 2018: Ch. 3):

¹ Popper 1979, 243. In some of his other publications, Popper has used the abbreviation TT (Tentative Theory) instead of TS

² Popper 1979. It should be emphasised that reality is not exhausted by the above three realms. Popper says: “We might, especially, distinguish more than three worlds.” (1979:107). “I will propose a view of the universe that recognizes *at least* three different but interacting sub-universes” (emphasis added). (1978:1).

³ Popper has discussed the idea of these two contexts in his 1959/2002, 31-32. Popper had argued the same idea in his 1935. But he has not used the terms I have introduced in the text. The first term, namely, ‘the context of discovery’ was used by Reichenbach in his 1938, 6-7. For the second context, Reichenbach coined the term ‘the context of justification’. Critical rationalists however, maintain that justification is not possible (Miller 2006/2017, Ch. 3). They separate the two contexts mentioned in the text and emphasise that all epistemological activities belong to the context of assessment. Popper says: “... we [should] clearly separate the psychological from the logical and methodological aspects of the problem. We must distinguish between, on the one hand, our subjective experiences or our feelings of conviction, which can never justify any statement (though they can be made the subject of psychological investigation) and, on the other hand, the objective logical relations subsisting among the various systems of scientific statements, and within each of them.” (1959, 22) Also see Swedberg 2014, 3.

⁴ The following is based on Paya 2018, Ch. 3.

(a) Ontological part: there exists a non-human, Supreme Being who is regarded as the Creator and Sustainer and/or the Lord and Master of the whole realm of being;

(b) Epistemological part: We can, in principle, learn more and more about this Being. This, however, does not imply that the realm of being is devoid of mysteries.¹ In fact, the very existence of these mysteries is a powerful source for encouraging the seekers of knowledge to tirelessly continue their never-ending pursuit of the truth about reality. For religious critical rationalists, part of this pursuit concerns getting closer to a better understanding of God.

The ontological statement, which posits the existence of a ‘Supreme Being’, of course, does this in a conjectural manner. Moreover, this is an extremely compact statement and needs to be unpacked. The process of unpacking the entailments of this statement leads to the emergence of a rich and ever-expanding network of meaning with regard to the attributes of the Lord/ Master of being. Different religions may attribute different characteristics to this Lord/Master. In some religions, the Lord/Master, as was suggested above, may be regarded as the Creator and Sustainer of the realm of being. Attributes such as infinite wisdom, power and compassion are among many other characteristics assigned to the Lord/Master of being. In some other religions, the Lord/Master may be described by means of anthropomorphic attributes such as eyes, ears, hands etc. In still other religions, the Lord/ Master may be identified with and analogically described by an amorphous cosmic force or energy.

Each of the attributes which are assigned to the Supreme Being, with the aim of further unpacking the compact statement about its existence, is, of course, nothing but a conjectural effort to develop (to the extent that it is possible) an accurate understanding of this Being. These conjectures, like all other knowledge claims, must be subjected to critical scrutiny.

The second part of all religions consists of rituals and religious practices, ethical norms, rules and regulations devised to assist the managing of the worldly affairs of the faithful. All elements of this second aspect fall under the general category of ‘technology’ and, as such, can be regarded as various types of ‘religious technology’ (Paya, 2018, ch 3).

Technologies of all sorts and types have two main functions: some respond to people’s non-cognitive needs while others facilitate, only as tools and instruments, our cognitive/knowledge pursuits. Chairs, shoes, cars, and democracies are examples of the first type of technology, while books, pens, laptops, and cyclotrons are examples of the second type. Of course, some technologies, like mobile phones, have both functions.

Religious technologies, just like all other technologies, have the two aforementioned functions, albeit in the sphere of religious aims and objectives. Religious technologies, in the context of any particular religion, help to construct particular forms of life. In this way, they respond to the non-cognitive needs of the faithful. For example, alms-giving, charity works, and collective forms of worship help to further consolidate community spirit amongst the faithful.

¹ Some aspects of reality or the realm of being may forever be beyond the reach of man’s knowledge. For example, the largest prime number or the number immediately after number 1 on the set of real numbers, or the cardinality of greatest infinity as defined by Cantor, can never be known

Moreover, such rituals can also help the faithful to develop a better character and become a better person. On the other hand, religious technologies could help the faithful in their pursuit of a better understanding of God. Prayers, for example, can elevate believers and assist them in their pursuit of acquiring a more truthful understanding of God. However, prayers, or any other religious ritual, on their own, are not knowledge; they are tools for achieving certain aims.

A sure sign of the effective use of religious technologies by the faithful is the effect of those technologies on the outlook and conduct of the believers. For example, in the case of those believers who apparently observe all their religious rituals but whose outward conducts remain unacceptable (e.g., they cheat, act immorally and treat others unjustly), one can safely assume that they have not benefitted from the religious technologies that they use.

For me, as a critical rationalist who happens to be religious, as stated above, religion is not based upon blind faith. It is a quest to understand aspects of reality that science does not touch. I do not regard religious faith as entirely based upon non-cognitive emotive elements or meaningful language games with no real referents. In fact, I argue that blind faith, i.e., a faith which is devoid of genuine cognitive elements, could pave the way to violence and evil acts. Such faith is motivated purely by emotions and propelled by will-power, not guided by the light of reason. There is no room for critical considerations in such a combination.

At this juncture, the following point needs to be clarified. On the one hand, as Popper has correctly observed, the realms of science and religion are distinct, and trespassing should not occur on both sides. (Popper, 2008: Ch. 5.) But on the other hand, and at the same time, one should not fall into the trap of either reducing religion to purely psychological, emotional and non-cognitive states or of regarding religious claims as being beyond rational critical assessment. Of course, religious claims need not be empirically testable or falsifiable to be assessable. They only need to be rationally criticisable.

Criticisability is a broader criterion than falsifiability which Popper himself developed after he realised the limitations of the falsifiability criterion for assessing non-empirical (e.g., philosophical) claims (Popper, 1963/2002: Ch. 8). I have stated that religious claims ought to be rationally criticisable. If religious claims are not rationally criticisable, they will be cognitively empty. Moreover, religious claims cannot be declared to be beyond critical assessment due to their 'sacred' status. The reason is apparent, even the most sacred religious proclamations and statements, just like reality itself, can only be approached through our interpretations and explanations. The latter, being human constructs, are certainly not sacred and, therefore, not exempt from critical assessment. In this respect, even science can be used to help us critically assess some of the claims made by believers in their conjectural bid to understand God and make sense of His words.

In the case of the religion of Islam, the conjectures with regard to the attributes of God are informed by a number of sources. These sources can play a role in the context of discovery as well as the context of assessment (Paya 2018: Ch. 2.). The first source is the Quran, which the majority of Muslims believe represents God's words. (Paya, *ibid*) The second source is the tradition

(Sunnah) of the Prophet Mohammad (and also, in the case of the Shi 'i Muslims, the tradition of the Shi 'i Imams). The third source is the views expressed by Muslim scholars and perhaps religious scholars who belong to other religions. And the last source is the believers' own personal religious experiences. The role of personal religious experiences in developing one's knowledge of God is a large topic which deserves closer attention.¹ Here I shall not be able to do justice to this important topic due to lack of space. However, whatever the role of the above sources, a main tenet of critical rationalism that one should bear in mind at this juncture is that our understanding of religious teachings, like our understanding of any other aspect of reality (in the extended sense of this term) always remains conjectural.

3- Critical Rationalism and Religion

Critical Rationalism, as a distinct school of thought and a way of life, has many things in common with certain interpretations of religion. The interpretation in question is the one which I have developed elsewhere.² Some of the main common themes between this interpretation and CR are as follows:

Both are against the extremist understanding of religion manifested by the likes of Daesh, supremacist Christians, extremist Jews, or militant Hindus who have no qualms about killing those who *they* regard as 'others';

Both are anti-positivism, anti-materialism, and anti-physicalism in that they subscribe to the view that reality is far richer than what can be grasped by the testimony of our senses or could be subjected to scrutiny by means of empirical evidence.

Both believe that there are many mysteries in reality, some of which we may never be able to comprehend or decipher.

Both maintain that individuals and communities ought to be moral, and both uphold and observe codes of morality.

Both share the view that knowledge is a pathway towards spiritual emancipation. And Truth is the ultimate goal of our knowledge pursuits.

Both aim at making the world a better place for all. And

Both argue that the future is open and optimism is a moral duty.

Part II- The Main Bones of Contention between a Believer and a Non-believer Critical Rationalist

In this part, the six issues which Professor Shearmur has discussed in his paper will be critically examined and replied to.

¹ Martin and McCutcheon 2012, Bernard 1992, Proudfoot 1985, Bellah 1970, Lewis & Whiteley 1955, James 1902/2002

² Paya 2018, Introduction

1- God and the Problem of Evil

Professor Shearmur's argument from evil presents a major challenge to believers.¹ As a way of responding to his challenge, let's begin by noting that evil is an absence of good. It is a privation. Like shadows, it does not have a real existence.² There are two types of evil:

- 1- Natural Evil, like natural disasters, such as earthquakes, the eruption of volcanos, pandemics, etc., are regarded as evil only when looked up from a human perspective. A quake or a hurricane in an uninhabited part of the earth, which does not cause the death of human beings or destruction of their properties, is not regarded as evil.
- 2- Moral Evil, which is caused as a result of human beings' immoral acts. A corrupt politician who betrays his constituency or a murderer who kills innocent individuals, are just two examples of this type of evil.

With regard to both types of evil, further deliberation would reveal that, in many cases, the appearance of an evil and the suffering that it causes are directly related to the intended or unintended human action. For example, the recent tragedy of the collapse of the Metropole Tower in Abadan was due to human negligence of the fact that nature takes its course regardless of peoples' wishful thinking.³ Similarly, those who build their houses in areas that are low-lying and liable to flooding, and neglect the fact that putting in place proper flood-control measures is a necessity, suffer from the consequences of their negligence. Or, when people choose unhealthy lifestyles, for example, by eating too much processed foods, exposing themselves to excessive amounts of sun rays without proper protection, or inhaling polluted air on a daily basis, etc., they will be liable to suffer from all types of diseases.

With respect to moral evil, people suffer as a result of the ill-intent of their fellow human beings who have chosen to exercise their free-will in morally unacceptable ways. The case of the Norwegian ultra-right terrorist, Anders Breivik, who killed 77 in twin attacks on Utøya island and Oslo (Townsend 2012), or the case of a British sperm donor who fathered fifteen children without telling their lesbian mothers who had received his sperm about his inheritable condition (Giordano 2022) are further examples of the appearance of moral evil.

Another aspect of the problem of evil which we must take into account is that, from a certain perspective, it has two dimensions: intellectual and emotional. I submit, without reservation, that while one may be able to explain, to some extent, the intricacies of the problem of evil and show that it has nothing to do with an all-powerful, all-knowing God whose goodwill is absolute and non-conditional, it is not at all easy, and even may be impossible, to tackle the emotional aspect of this problem. A mother whose little child has died as a result of an incurable type of cancer may well remain inconsolable, even after listening to many lengthy rational explanations.

¹ Points II 2.1 & 2.2. in Professor Shearmur's paper.

² On the problem of evil see, among others, Farrington (2015), Davies (2006), Koslowski (2001).

³ Berg 2022, Ahmadi and Peyravi 2022

One of the trickiest aspects of the problem of evil is that people ask, “Where has God been when they were suffering and calling upon Him but receiving no reply?” While I readily admit that one may not always be able to offer a satisfactory answer to the above question, I suggest that if one could momentarily bracket the emotional aspect of the problem, it may be possible to take some steps towards a somewhat reasonable answer. There is a nice proverb in English which says, “One cannot have one’s cake and eat it”. But what does it mean in this context?

The difference between us, human beings, and both animals and angels are that while animals act according to their pre-programmed instincts, and Angel’s act according to their pre-programmed rational designs, it is us, the human beings, who are endowed with not only rational and emotional capacities but also free will.

If God constantly intervenes in human affairs, in other words, if He micromanages *our* affairs, He deprives us of the consequences of our free choices and reduces us to mere robots and automatons. In other words, free will and personal responsibility go hand in hand. And they are two of the main hallmarks that set human beings apart from other beings. One cannot expect to enjoy the privileges of having free will and, at the same time, expect to be micro-managed by God or any other entity, for that matter.

God is just. He is also wise. However, in talking about God’s attributes and actions, one must not adopt an anthropomorphic approach. God’s justice does not mean that God acts according to our understanding of justice. *Our* understanding of justice and *our* understanding of rationality, as well as *our* understanding of the principles of morality, are constantly evolving.

Values such as justice and principles of ethics are objective and part of the fabric of reality (Paya 2019). We constantly find out more and more about the infinite capacities of these values and principles, and correct our earlier mistaken views about them through our lived experiences in the sphere of the human condition.

I will say more about the problem of evil later on. But at this juncture, I must say something about the issue of non-conventional lifestyles.¹ I have deliberately chosen the term “non-conventional lifestyles” as an all-inclusive, neutral term to cover all those groups who identify themselves to be outside the conventional part of a Bell-shaped curve which depicts the distribution of all types of sexual relationships between people. I discuss this issue in a number of steps.

a- The issue of ‘non-conventional lifestyles’ is complicated and, therefore, should be discussed with care and patience.

b- The complexity of this issue, in the context of Islamic culture, is due to the impact of a number of independent factors, including God, the fuqaha (Muslim experts of the Sharia law), the law of the land, the individuals who have adopted the non-conventional lifestyle, and the varieties of these lifestyles, which each invites a separate treatment.

c- For example, whereas transvestites who wish to adjust their bodies to their psychological dispositions receive support from Fiqh (Islamic jurisprudence) and the fuqaha, homosexuals are

¹ Point II 3. in Professor Shearmur’s paper.

treated differently according to the traditional juristic views. There are also certain differences between the religious rulings for homosexuals and lesbians (Teymoori 2018, Al-Munajjid 2009).

d- It is claimed by some scientists that non-conventional lifestyles have biological and genetic causes. This is a controversial issue among the scientists themselves.¹ Some, for example, lay more emphasis on environmental (including social) factors and minimise the role of biological causes. But assuming that at least some of those who prefer a non-conventional lifestyle are biologically programmed and cannot do anything about it, then this adds a new layer of difficulty to the problem of their status from a religious point of view.

e- As far as God is concerned, His will, as is understood by believers, is to facilitate mankind's journey towards the goal of getting as close to God and becoming similar to Him (with respect to adopting God-like attributes) as humanly possible. In the context of Islam, whoever acknowledges himself/herself as a Muslim, cannot be denied this status. I.e., being regarded as a Muslim. Among all attributes of God, the two that outshine the rest are His mercy and compassion. All Muslims, whether sinners or pious, could partake in the journey towards God. God does not deprive them, nor does He deprive even the non-believers, of His mercy and compassion.

f- All Muslim fuqaha (jurists) have declared homosexual and lesbian lifestyles as *haram* (forbidden) and prohibited Muslims from adopting them.²

7- An individual who lives in a particular jurisdiction, Islamic or otherwise, is obliged to observe the laws of the land in which he/she has chosen to reside.

g- If an observant Muslim, who is inclined towards an unconventional lifestyle, realised that his/her choice had been made as a result of environmental pressures and *not* as the outcome of an unchangeable biological or genetic condition, then he/she ought to refrain from pursuing the lifestyle which is considered to be *haram* in the eyes of Shariah.

h- If an observant Muslim who is inclined towards a non-conventional lifestyle feels so due to his/her biological condition, then he/she is advised to adopt (if possible) a celibate lifestyle. This is in tune with the rulings of Sharia.

i- If an observant Muslim who is inclined towards a non-conventional lifestyle wishes to change his/her lifestyle and adopt a conventional lifestyle, then the authorities and lawmakers must provide him/her with all sorts of facilities which are needed for this purpose.

j- If an observant Muslim, who is inclined towards a non-conventional lifestyle, decides not to adopt a celibate lifestyle, then he/she must be aware of the fact that in the eyes of Sharia, he/she is regarded as committing a heinous sin. Such as, an individual can still continue to be a practising Muslim. His/her relation with God is only between him/her and God. Sharia is mostly concerned with Muslims' interactions in the public sphere.

¹ Akapn 2019, Reardon 2019, Kaiser 2019.

² In contrast, some reform-minded Muslims have tried to challenge the fuqaha's rulings in this respect. See for example

Having discussed, albeit briefly, two major issues raised by Professor Shearmur, which might appear as conceptual problems for believers, I should now say a few words about one substantial conceptual difficulty for non-believers. I discuss some of the other difficulties in the latter parts of the paper.

Immanuel Kant, the great German philosopher, introduced three fundamental questions which, in a sense, set the agenda for the present debate. Kant's questions were as follows:

“What can I know?”

“What must I do?” and

“What may I hope?” (Kant, 1788/2015, A805/B833)

The first question deals with our innate urge to acquire knowledge about reality, The second question pertains to our conduct in life as moral agents, and the third question concerns our fate at the end of our life.

I readily grant that my learned friend, Professor Shearmur, could come up with more or less satisfactory answers for questions 1&2. But I submit that finding a satisfactory answer to question 3 is not easy, if not impossible, for a non-believer. But why?

The third question is closely related to what great thinkers of the 19th century, such as Nietzsche and Dostoevski, had dubbed ‘nihilism’ (Nietzsche 1882/1892/ 1974, Dostoevski 1879/1912/2015). It is about the **meaning** of one's life and the **values** one holds dear (Hendricks (2010), Kugle (2010)). It emerges because of the phenomenon of death and our awareness of its inevitability.

The issue or challenge of nihilism can be formulated in the following way:

If God does not exist, and if death means the absolute end to one's actual participation in life and the development of one's abilities and positive potentials, then the whole enterprise of living in the world as a self-conscious being with lofty ideas and ideals, including making the world a better place for all, and lessening the amount of suffering, becomes meaningless or absurd.

If one's perspective on life is based upon the conviction that one has come into a deaf and dumb universe by pure chance, and all that one can expect and hope for, is, if one is lucky, to live for a short period of time and, assuming that one is a moral agent, participate in a limited number of remarkable deeds before turning into stardust, then one should ask oneself: what is the point?

The above predicament has been brought into sharp relief by an eye-opening thought experiment suggested by Samuel Scheffler, the American philosopher (Scheffler (2013)). Scheffler invites us to think about the following scenario (I have made a slight change in his thought experiment): Suppose scientists have discovered that a large asteroid is on course to hit the earth a month from now, and as a result of the impact, the whole earth will be annihilated, and no one will survive.

Scheffler asks: how this affects one's attitude and consideration about one's choices and what one has to do now. In the context of the above thought experiment and with respect to Kant's third question, i.e., what may I hope? It seems non-believers can no longer hope that future generations will benefit from the fruits of their labour. There will be nobody to either appreciate or benefit from them.

In the context of the above thought experiment, it is not difficult to see why nihilism poses a serious threat to those who think this life is all that they have got. The above, however, is not the case for believers who believe that this life is just a small part of a never-ending journey of acquiring perfection.

But the argument from nihilism is not the only reason that gives the position of the believers who subscribe to enlightened interpretations of religion, and in this case, I specifically have in mind a critical rationalist interpretation of religion an edge over the position of non-believers, including a critical rationalist non-believer. There are other cases which, as it will be shown below, further strengthen the position of believer's vis-à-vis non-believers. In what follows, I discuss, in a brief manner, a number of such cases under these headings: 'Hope, suffering, Death, Consolation, and Salvation,' 'religion and our knowledge of the world,' and 'why genuine personal religious or mystical experiences could be used by believers to not only further refine their knowledge of God but help them to assess such knowledge critically and possibly (provisionally and until fresh experiences become available, corroborate it)?'

2. Hope, Suffering, Death, Consolation, Salvation

The network of the interconnected concepts of hope, suffering, death, consolation and salvation could be used to produce some arguments against the position of non-believers.

Hope, as we know, plays an important role in the well-being of individuals, groups and nations. With respect to Kant's third question, i.e., what may I hope? The account that religion proposes could help people to adopt a more positive and hopeful attitude towards life, even in the face of adversities and unbearable suffering.

In my opening remarks, I briefly referred to the issue of emotional response to suffering and hardship, which are caused by tragedies such as the loss of our loved ones. Consoling people in such tragic situations is not easy. However, I would like to argue that even in such cases, believers have an edge over non-believers.

Marcus Tullius Cicero (106-43 BCE), the great Roman orator and politician, and one of the best-known members of the school of Stoicism, who had written a treatise on consolation (Cicero (2022)), is the champion of the art of consolation for non-believers, even today. Stoics, both classic and modern, maintain that wise individuals should learn to endure suffering. But as Michael Ignatieff has eloquently explained in his recent book, *On Consolation: Finding Solace in Dark Times* (Ignatieff 2015/2021), when Cicero's beloved daughter died while giving birth to her child, Cicero's philosophical writings proved unable to console him. For a long time, the champion of consolation was unable to console himself.

I should like to suggest, as an empirically testable conjecture, that believers are better equipped to deal with personal tragedies. For believers, even in the darkest hours, there is hope since God never leaves His friends alone.

It seems for the majority of people; the greatest personal tragedy is their own death or the death of their nearest and dearest. Perhaps the most effective consolation in the case of death is the notion

of salvation. I submit that such a powerful and positive tool is missing from the armoury of non-believers.

Another argument from the above network of meaning is related to the notion of endurance in the face of hardship and consolation. Luc Ferry, the French philosopher, himself a non-believer, in his book *A Brief History of Thought: A Philosophical Guide to Living* (Ferry 1996) argues that one of the main reasons that Stoicism, despite all its powerful intellectual facilities, was defeated in competition with the then newly-emerged Christianity was the poverty of its account of salvation.

The Stoic doctrine of salvation is resolutely anonymous and impersonal. It promises us eternity but of a non-personal kind, as an oblivious fragment of the cosmos. In contrast, Christianity (and indeed all Abrahamic religions) promise us no less than everything that we would wish for personal immortality and the salvation of our loved ones (Ferry 1996).

Another point that gives believers an edge over non-believers is a particular type of richness which is exclusive to religious life. A non-religious individual who has never had any serious dealing with the religious sphere, religious experiences and religious forms of life cannot fully appreciate the literary and artistic works whose core meaning and values are religious. If God is removed from the history of mankind, this history will become very impoverished indeed. The majority of the greatest artistic & literary works in the history of mankind are inspired by the belief in God, i.e., a transcendental, sublime reality.¹

Another argument which works in favour of the position held by believers is the issue of the unresolved cases of injustice at the level of individuals or groups. Throughout the history of mankind, there have been many cases in which individuals, groups or even nations have been wronged by others without being able to obtain justice. If death is the end of everything, then innocent victims, who have been wronged, have every right to feel betrayed.

Such victims, if they are convinced that they are not going to get the justice they deserve, may react in many unexpected ways which may not be compatible with the well-being of other innocent individuals or society at large.

In Islamic teachings, on the one hand, people are invited to observe justice, in its fullest sense, in all their activities. After all, they are created in the image of God and should try to become like Him.

The Quran says:

O believers, be your securers of justice, witnesses for God. Let not detestation for a people move you not to be equitable; be equitable -- that is nearer to *taqva*

¹ Dupré 1975. The point that I have made in the text should not be misunderstood. I entirely agree with Professor Shearmure that many non-believers have refined sense of aesthetic and enjoy all sorts of art including religious art. However, the point I have tried to make in the text is that the type of personal experiences which religious people undergo upon encountering a piece of religious art, could be qualitatively different from what non-believer's experience in their encounter with those same pieces of art.

(i.e., observing the etiquettes of being in the presence of God). And observe the *taqva* of God; surely God is aware of the things you do.¹

On the other, it assures the believers that God is aware of people's deeds and even their intentions, and He will reward them or punish them accordingly. And escape from His governance (the realm of authority) is impossible.

The Quran says:

And whoever does an atom's weight of good shall see it, and whoever does an atom's weight of evil shall see it. The above is a constant theme in the Quran. It is a message of hope for believers and a stern warning to wrong-doers.²

And let's not forget that one of God's attributes is the Truth with capital T. This means, among other things, that God never gives any untrue message to people.

With regard to the above argument, Professor Shearmur has raised a rather serious challenge. In the section entitled: "Part III: Concluding Reflections his paper" under the subtitle "1. Is belief in God a Consolation?" he argues: "to believe in things just because one thinks that if they were true, it would be nice, is what one would expect from the feeble-minded, but obviously not from someone of the calibre of Professor Paya. One should, surely, require that it is reasonable to hope that one's views could be true or close to the truth. And in my view, in the face of the sorts of problems to which I have referred, the case against them being reasonable looks to me a tough one to meet."

The above is an important argument. I entirely agree with my learned friend that naïve and baseless hope in things which have no basis in reality is certainly irrational. But the question is: is believers' hope in God's mercy and benevolence naïve and baseless? Immanuel Kant has already provided an answer to this important question which to me seems to be comprehensive and cogent. Kant's answer was directly related to his understanding of the notion of 'the sublime'. Kant presented his answer in three of his treatises, *Observations on the Feeling of the Beautiful and Sublime* (Kant 1764/2011), *Anthropology from a Pragmatic Point of View* (Kant 1772/2006), and the *Critique of Judgement* (Kant 1790/2000). Kant tried not only to explain why to have hope in the mercy and benevolence of God is rational but also tried to elaborate under what sort of conditions such hope is rational. He distinguished three kinds of sublime (Kant, 1764/2011, 2:209: 16)

- ✓ 'The terrifying sublime' which is accompanied with dread or melancholy;
- ✓ 'The noble sublime' which deals with a quiet wonderment; and

¹ The Quran 5: 8 (Arberry).

يَا أَيُّهَا الَّذِينَ آمَنُوا كُونُوا قَوَّامِينَ لِلَّهِ شُهَدَاءَ بِالْقِسْطِ وَلَا يَجْرِمَنَّكُمْ شَنَاَنُ قَوْمٍ عَلَىٰ أَلَّا تَعْدِلُوا اعْدِلُوا هُوَ أَقْرَبُ لِلتَّقْوَىٰ وَاتَّقُوا اللَّهَ إِنَّ اللَّهَ خَبِيرٌ بِمَا تَعْمَلُونَ (المائدة ٨).

² The Quran 99:7 & 8 (Arberry+ Qarai),

مَنْ يَعْمَلْ مِثْقَالَ ذَرَّةٍ خَيْرًا يَرَهُ (٧) وَمَنْ يَعْمَلْ مِثْقَالَ ذَرَّةٍ شَرًّا يَرَهُ (الزلزله ٨).

- ✓ ‘The splendid sublime’ that deals with beauty pervading a sublime design, e.g., St. Peter in Rome (Hund, 1983: 46).

And in his in *Anthropology*, he described the sublime in this way:

The sublime is awe-inspiring greatness (*magnitudo reverenda*) in extent or degree which invites approach (in order to measure our powers against it); but the fear that in comparison with it we will disappear in our own estimation is at the same time a deterrent (for example, thunder over our heads, or a high rugged mountain). And if we ourselves are in a safe place, the collecting of our powers to grasp the appearance, along with our anxiety that we are unable to measure up to its greatness, arouses surprise (a pleasant feeling owing to its continual overcoming of pain).¹

Kant argues ‘the sublime’ cannot be perceived in a sensuous form but can only be conceived, rather inadequately, by the mind’s eye and the power of reason. However, since all our mental activities are prompted by challenges introduced by reality, in the case of ‘seeing’ the sublime with our mind’s eye, nature can play an important role. Kant introduces two types of phenomena that can prompt us to develop some (inevitably inadequate) conception of the sublime. He dubs these two types of phenomena ‘mathematically sublime’ and ‘dynamically sublime’.² The first refers to various kinds of mathematical infinities and the latter to the might of nature to bring about natural phenomena with colossal proportions. Kant gives the example of the eruption of powerful volcanos or the emergence of tremendous hurricanes or devastating earthquakes. We can think of the explosion of supermassive black holes as a new set of ‘dynamically sublime’ phenomena unknown to Kant. Having introduced these two concepts, Kant further argues that both serve to demonstrate the superiority of the human mind over whatever which belongs to the realm of phenomena: “The above explanation can also be expressed thus: That is sublime in comparison with which everything else is small. ... Thus, we can also add this to the foregoing formulation of the explanation of the sublime: That is sublime which even to be able to think of demonstrates a faculty of the mind that surpasses every measure of the senses.”³

While the notion of ‘mathematically sublime’ establishes the intellectual power of humans over nature, the notion of ‘dynamically sublime’ serve to demonstrate something even more subtle. Kant says: “**Power** is a capacity that is superior to great obstacles. The same thing is called **dominion** if it is also superior to the resistance of something that itself possesses power. Nature considered in

¹ Kant 1772/2006, 140. Goldswait 1960, in his translation of *Anthropology from a Pragmatic Point of View*, has translated the same paragraph in this way: “The sublime is that greatness in size or intensity which inspires awe: it simultaneously invites us to approach it (so as to make our forces equal to it) and deters us by the fear that in comparison with it we shall shrink into insignificance in our own estimation (thunder over our head, for example, or a high rugged mountain). When we are in a safe place, the gathering of our forces to grasp the appearance, along with our anxiety about not being able to rise to its greatness, arouses *astonishment* (a feeling that is agreeable because it continuously triumphs over pain).” (Goldswait 1960, 45). Lund has used this translation in his paper (Lund 1983, 46).

² Kant 1790/2000, First Section, Second Book, Analytic of the Sublime, 128-159.

³ Kant 1790/2000, 134. Emphases suppressed.

aesthetic judgment as a power that has no dominion over us is **dynamically sublime**. If nature is to be judged by us dynamically as sublime, it must be represented as arousing fear (although, conversely, not every object that arouses fear is found sublime in our aesthetic judgment).¹ From here, Kant moves to present an argument which provides an excellent answer to Professor Shearmur's objection. Kant argues that God, with all His Might and Power, *can* (in principle) induce immeasurable degrees of fear in mortal souls. But those believers who have lived genuinely moral lives have no fear of God, instead they realistically believe in God's infinite mercy and benevolence:

Thus, the virtuous man fears God without being afraid of him, because he does not think of the case of wishing to resist God and his commands as anything that is worrisome for **him** ...² ... Only when he is conscious of his upright, God-pleasing disposition do those effects of power serve to awaken in him the idea of the sublimity of this being, insofar as he recognises in himself a sublimity of disposition suitable to God's will, and is thereby raised above the fear of such effects of nature, which he does not regard as outbursts of God's wrath (Kant, 1790/2000: 147) ... In this way alone does religion internally distinguish itself from superstition, the latter not providing a basis in the mind for reverence for the sublime, but only for fear and anxiety before the being of superior power, to who's will the terrified person sees himself as subjected without holding him in great esteem; from which of course nothing can arise but the attempt to curry favour and ingratiate oneself, instead of a religion of the good conduct of life.³

3. Religion and Our Knowledge of the World

When it comes to our knowledge of reality, it is clear from the teachings of Islam that the task of the Prophet and the Quran is not to teach us physics or chemistry or natural sciences in general. A clear division of labour can be observed in Islamic teachings.

On the one hand, Islamic teachings encourage us to explore various aspects of reality by means of the power of our intellect and the cognitive facilities we are endowed with. On the other, Islamic teachings help us to better understand the intricacies of *the human condition* and, even more importantly, the complexities of the afterlife.

Our understanding of the teachings of Islam, as critical rationalists explain, always remains conjectural. And, of course, we are expected to constantly subject our conjectures to the severest critical assessments.

¹ Kant 1790/2000, 143-4. Emphases in original.

² Kant 1790/2000, 144. Emphasis in original.

³ Kant, *ibid.* What Kant discusses concerning the confidence of the virtuous human beings before God, is echoed in many of the verses of the Quran, including the following: "O soul at peace, return unto thy Lord, well-pleased, well-pleasing! Enter thou among My servants! Enter thou, My Paradise!" (89: 27-30, Arberry)

4. The Epistemic Worth of Religious or Mystical Experiences

Genuine mystical experiences are a subset of lived religious experiences. Lived religious experiences are, in turn, a subspecies of lived or personal experiences in general. Lived experiences, in general, as critical rationalists have argued, form the backbone of all our knowledge claims.¹ In the absence of such experiences, which are informed by our quests to find solutions for some of the challenges reality presents to us, no conjecture can be formed. And in the absence of conjectures about reality, no knowledge can be gained.

Our personal or lived experiences, to be of epistemic service to us, should be reconstructed with the help of our memory, the conceptual schemes as well as the categories we have created, and the language facilities at our disposal. Personal experiences, which are reconstructed, take the shape of statements and propositions. In this form, they can be presented to the public sphere, as conjectures or knowledge claims concerning a certain aspect of reality, for critical scrutiny.

Whether a particular personal or lived experience is refuted or corroborated, as the result of critical scrutiny in the public sphere, we stand to learn something about reality. In the case of refutation, we learn that reality is not the way the refuted conjecture had claimed. In the case of corroboration, we regard the knowledge imparted by the conjecture in question as our best understanding of a particular aspect of reality for the time being.

One of the common criticisms against religious and mystical experiences is that they are, more than other types of knowledge claims, open to abuse because they are subjective and, therefore, not criticisable. This common conception, however, is not correct.

Muslim mystics (*'urafa*) have introduced rigorous methods for separating fake mystical experiences from genuine ones. They have discussed their methods in various books. One of the better-known works in this genre is Ibn Arabi's treatise entitled, *A Treatise on what cannot be trusted (or relied upon)*.² It contains more than 300 practical instructions to help the practitioners of mysticism and the public to assess the worth of mystical experiences. In short, it contains some methodological rules, on par with modern methods discussed in modern methodologies, such as critical rationalism (Paya 2023).

Part III. Concluding Remarks

In the last part of my paper, I would like to highlight some of the main arguments, which I hope, show why a critical rationalist is better off being a believer and not a non-believer.

¹ Popper 1974, 1087; Paya 2003, Ch. 7; 2024, Ch. 8. Popper writes: "Intellectual intuition and imagination are most important [in the sciences]" I wrote [in C.& R., p. 28 (point 8)], 'but they are not reliable: they may show us things very clearly, and yet they may mislead us. They are indispensable as the main sources of our theories; but most of our theories are false anyway.' All this applies to the discovery of new theories (or proofs). Once they are produced, we examine them critically. And this critical examination is the rational part of theory production. But all this is, of necessity, highly schematic. In reality, we constantly switch from intuition to criticism and back to intuition; besides, intuition often enters in the critical phase: we often learn to "see" without any detailed examination that something is wrong (and sometimes we "see" wrongly)." (1974, 1087)

² Ibn Arabi. (رسالة ما لا يُعَوَّلُ عليه) *Mā Lā Yo'awwalu 'Alaih*

As was discussed earlier, it seems to me that the issues of the end of life and unresolved cases of injustice and inequity cannot be adequately answered by those who do not believe in an all-knowing, all-powerful, absolutely just and merciful God.

Allow me to elaborate:

It was already stated that critical rationalists lay great emphasis on the importance of living a moral life and on the duty of the individual to do their best to make the world a better place for all.

But how can this goal be achieved in practice?

For critical rationalists, while in the realm of ideas, one is to be revolutionary in that one should try to produce as many viable conjectures for theoretical problems and critically assess their weaknesses in the hope of learning from their shortcomings. But, in contrast, when it comes to dealing with people instead of ideas, one ought to be extra cautious and adopt a piecemeal approach towards making the world a better place for all. This is because, in this sphere, one can cause irrevocable harm if one is not extra careful with people's lives and their well-being.

Now, consider the case of those who believe that death is the end of everything for them. If they have been wronged and have suffered from cases of unresolved injustice, they are likely to adopt one of the following two approaches:

They may become depressed and live the rest of their lives with the sad and depressing feeling that others have wronged them without any prospect of receiving justice, or they may decide to take the law into their own hands and rebel against a system they regard as unjust.

Neither of these options leaves much room for making the world a better place. Because in the first case, the individuals will be victims of what others have done to them. In the second case, the actions of the rebel individuals may cause the death and destruction of lives and properties and victimisation of innocent individuals.

In contrast, as was explained before, a critical rationalist approach to religion encourages people to do their best to live a moral life and help make the world a better place for all.

But at the same time, a religious interpretation of critical rationalism advises individuals not to lose hope under any circumstance and never yield to despair and depression. It advises the individuals that even if, at the end of the day, as a result of the injustices imposed upon them, they have not been able to obtain justice and reap the rewards of their labour in this world, despite their best rational efforts to address them, all is not lost. They can still remain hopeful that their good deeds are not wasted and that the inequities they have experienced, undeservedly, at the hand of others, will not go unpunished.

This is because, according to a critical rationalism account of religion, this world is only the first stage of a never-ending journey towards perfection, and whatever people do, good or bad, will be assessed by an omniscient, omnipotent, just and compassionate God.

In contrast, a deaf and dumb world, which is subject to blind random actions of physical forces, is a very scary and terrifying abode indeed.

References

- Akpan, N. (2019). There is no 'gay gene'. There is no 'straight gene'. Sexuality is just complex, study confirms, PBS, <https://www.pbs.org/newshour/science/there-is-no-gay-gene-there-is-no-straight-gene-sexuality-is-just-complex-study-confirms>, (accessed 27/5/2023 The following is based on Paya 2018, Introduction).
- Al-Munaijid, M. S. (2009). Why Does Islam Forbid Lesbianism and Homosexuality? *Islam: Questions & Answers*, <https://islamqa.info/en/answers/10050/why-does-islam-forbid-lesbianism-and-homosexuality>, (accessed 27/5/2023).
- Barnard, W. (1992). Explaining the Unexplainable: Wayne Proudfoot's 'Religious Experience' *Journal of the American Academy of Religion*, 60(2), 231-256.
- Bellah, R. (1970). Christianity and Symbolic Realism, *Scientific Study of Religion*, 9(2), 89-96.
- Berg, R. (2022). Iran building collapse death toll jumps to 26, BBC, <https://www.bbc.co.uk/news/world-middle-east-61548490>, (accessed 27/5/2023).
- Cicero, M. T. (2022). *How to Grieve: An Ancient Guide to the Lost Art of Consolation*, Translated with commentary by Michael Fontaine, Princeton University Press.
- Davies, B. (2006). *The Reality of God and the Problem of Evil*, Continuum.
- Dostoevski, F. (1879). *Brothers Karamazov*, English translation by Constance Garnett, (2015), First Avenue Editions, A division of Learner Publishing Group, Inc.
- Louis, D. (1975). The Enigma of Religious Art, *The Review of Metaphysics* 29(1), 27-44.
- Ferry, L. (2019). *A Brief History of Thought: A Philosophical Guide to Living*, Harper-Perennial.
- Giordano, C. (2022). Sperm donor fathered 15 children without telling mothers of incurable genetic condition, *The Independent*, Monday 6 June, <https://www.independent.co.uk/news/uk/home-news/sperm-donor-incurable-condition-james-macdougall-b2091072.html>, (accessed 27/5/2023).
- Goldthwait, J. (1960). *Anthropology from a Pragmatic Point of View*, Berkeley.
- Hendricks, M. (2010). Islamic Texts: A Source for Acceptance of Queer Individuals into Mainstream Muslim Society, *The Equal Rights Review*, Vol. 5, pp. 31-51.
- Hund, W. (1983). The Sublime and God in Kant's *Critique of Judgement*, *The New Scholasticism*, 57(1), 42-70.
- Ignatieff, M. (2015/2020). *On Consolation*, Metropolitan Books.
- James, W. (1902/2002). *Varieties of Religious Experience: A Study in Human Nature*, Routledge.
- Kaiser, J. (2019). Genetics may explain up to 25% of same-sex behavior, giant analysis reveals Still, researchers caution that genes can't predict who might be gay, bi, or straight, *Science*, 29 August, <https://www.science.org/content/article/genetics-may-explain-25-same-sex-behavior-giant-analysis-reveals>, (accessed 27/5/2023).
- Kant, I. (1764/2011). *Observations on the Feeling of the Beautiful and Sublime*, edited by P. Frierson & P. Guyer, Cambridge University Press.
- Kant, I. (1772/2006). *Anthropology from a Pragmatist Point of View*, translated and edited by R. Louden, Cambridge University Press.
- Kant, I. (1788/2015). *Critique of Pure Reason*, translated by Mary Gregor, revised edition, Cambridge University Press.
- Kant, I. (1790/2000). *Critique of the Power of Judgment*, translated by P. Guyer & E. Mathews, Cambridge University Press.
- Koslowski, P. (ed.) (2001). *The Origin and the Overcoming of Evil and Suffering in the World Religions*, Springer.
- Kugle, S. S. (2010). Sexual Diversity in Islam, *Muslims for Progressive Values*, <https://www.mpvusa.org/sexual-diversity>, (accessed 27/5/2023).
- Lazaroff, A. & Boston. (1980). *The Kantian Sublime: Aesthetic Judgment and Religious Feeling*, Kant-Studien, 71:2

- Lewis, H. D. & Whiteley, C. H. (1955). Symposium: The Cognitive Factor in Religious Experience, *Proceedings of the Aristotelian Society, Supplementary Volumes*, Vol. 29, Problems in Psychotherapy and Jurisprudence, pp. 59-92.
- Martin, C. & McCutcheon, R. (eds.) (2012). *Religious experience: a reader*, Routledge.
- Marzaleh, M., Ahmadi & Peyravi, M. (2022). Lessons Learned from the Collapse of the Metropole Building, Iran, *Disaster Med Public Health Prep.* 17(e232), 1–2. <https://doi.org/10.1017/dmp.2022.173>, (accessed 27/5/2023).
- Miller, D. (1994). *Critical Rationalism: A Restatement and Defense*, Open Court.
- Nietzsche, F. (1883). *Thus Spoke Zarathustra: A Book for All and None*, English translation by R. J. Hollingdale (1974), Penguin.
- Paya, A. (2003 & 2024). *Analytic Philosophy: Problems and Prospects*, Tarh-e No. The 2024 edition of this book is a revised and expanded edition. (in Persian)
- Paya, A. (2018). *Islam, Modernity and a New Millennium: Themes from a Critical Rationalist Reading of Islam*, Routledge.
- Paya, A. (2019). Justice and Ethics as Totipotent Emergent Properties: A Critical Rationalist Perspective, in the *Proceedings of the Annual International Conference on Shi 'i Studies*, Vol. 4, ICAS Press.
- Paya, A. (2023). The Myth of 'Modern Islamic Sciences' and the Contribution of Muslim Scientists to Modern Sciences: The Case of ibn Arabi's *Mā Lā Yo 'awwalu 'Alaih* (What Cannot be Trusted), *Zygon*, autumn 2023 (forthcoming).
- Popper K. (1935). *Logik der Forschung*, Verlag von Julius Springer.
- Popper, K. (1945/19662). *The Open Society and Its Enemies*, Routledge.
- Popper, K. (1959/2002). *The Logic of Scientific Discovery*, Routledge. Originally published in Popper.
- Popper, K. (1963/2002). *Conjectures and Refutations*, Routledge.
- Popper, K. (1978). *Three Worlds, The Tanner Lecture on Human Values*. Delivered at The University of Michigan 7 April, 1978. <https://tannerlectures.utah.edu/resources/documents/a-to-z/p/popper80.pdf>, Accessed 26 May 2023.
- Popper, K. (1994/2000). *In Search of a Better World*, Routledge.
- Popper, K. (1994). *The Myth of the Framework: In Defence of Science and Rationality*, Routledge.
- Popper, K. (2008). *After the Open Society: Selected Social and Political Writings*, edited by J. Shearmur & P. N. Turner, Routledge.
- Proudfoot, W. (1985). *Religious experience*, Berkeley and Los Angeles, University of California Press.
- Reardon, S. (2021). Genetic patterns offer clues to evolution of homosexuality, *Nature*, 23 August, <https://www.nature.com/articles/d41586-021-02312-0>, (accessed 27/5/2023).
- Reichenbach, H. (1938). *Experience & Prediction*, Chicago University Press.
- Scheffler, S. (2013). *Death and the Afterlife*, Oxford University Press.
- Shearmur, J. (2023). Is It More Reasonable for a Critical Rationalist to Be non-Religious? *Philosophical Investigations*, 17(42) 317-331.
- Teymoori, A. (2018). Homosexuality from Shia Jurist's Point of View, *Ijtihad*, <http://ijtihadnet.com/homosexuality-from-shia-jurists-point-of-view/>, (accessed 27/5/2023).
- Townsend, M. (2012). Anders Behring Breivik's 21-year jail term closes Norway's darkest chapter, *The Guardian*, 24 August 2012, <https://www.theguardian.com/world/2012/aug/24/anders-behring-breivik-verdict-norway-utoya>, (accessed 27/5/2023).

The Problem of Certainty in Religion and Science: two critically rational solutions to the Feynman Dilemma

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The influential physicist Richard Feynman became interested in the relationship between religion and science during a mid-career phase. He proposed that their interface was embroiled in unresolvable difficulties. He felt that science demanded an attitude of uncertainty for its claims, while religion contrarily required certain belief in its core doctrines. Though possessing several non-contradictory dimensions, Feynman felt that the nature of the truth claims of science and religion suffered from insurmountable elemental conflicts. This was by contrast to Karl Popper, the leading critical rationalist of the 20th century, who argued that there could be no tension between science and religion. This paper will argue that the ‘Feynman Problem’ is not as insoluble as it appears. Rather, several solutions exist within critical rationalism. Two will be presented-the first revolves around the conjectural basis of knowledge and is already a well characterised critical rationalist notion. The second is a novel solution based on the separate categorisation of psychological, pragmatic, and epistemological attitudes to religion and science. Karl Popper’s view of religion-science dissimilarity was a minimalist point of departure for critical rationalists, who have developed increasingly sophisticated frameworks for investigating the relationship between faith and reason. Critical rationalism represents an equally inspirational methodology for the pursuit of scientific and religious truth. Though both Feynman and Popper’s views on religion were underdeveloped, they foreshadowed the religion-science frameworks advocated by many late 20th century scientists, especially in the form of New Atheism and Gould’s NOMA theory.

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Richard Feynman (1918-1988) was one of the most decorated physicists of the 20th century, a Nobel laureate for the development of quantum electrodynamics (QED) theory. In both his early and very late career, he expressed disdain for philosophy, condemning it as “low-level baloney” (Feynman, 1997 [1985], 199). He described philosophers as “. always on the outside making stupid remarks” (Gleick, 2011 [1992], 11). He favoured a pragmatic approach to knowledge (Ibid, 2011 [1992], 12) while affording some level of prestige to logic (Ibid, 2011 [1992], 165-166), especially within a mathematical context. However, aloofness from philosophy has resulted in the following notorious apocryphal saying being attributed to Feynman: “The philosophy of science is as useful to scientists as ornithology is to birds” (Trubody, 2016, 10).

Far from being an exceptional outlook, Feynman’s estimation of philosophy has been echoed by subsequent physicists, such as Stephen Hawking and Lawrence Krauss, with the former’s stance typified by the claim that: “Traditionally these are questions for philosophy, but philosophy is dead. Philosophy has not kept up with modern developments in science, particularly physics. Scientists have become the bearers of the torch of discovery in our quest for knowledge” (Hawking & Mlodinow, 2010, 7)¹. Feynman’s views on religion have also influenced the New Atheist movement (Dennett, 2006, 220, 231; Stenger, 2012, 274).

However, a few famous physicists that were contemporaneous with Feynman upheld the compatibility of religion and science and the crucial value of philosophy. Albert Einstein and Freeman Dyson are two prominent examples (Einstein, 1954, 44-45; Dyson, 1998, 7-9). Their opinions influenced Stephen Jay Gould’s later non-overlapping magisteria (NOMA) theory (Gould, 1999, 30-33), which competed with New Atheism.

Unfortunately, Feynman’s anti-philosophical rhetoric has obscured the fact that he sensitively engaged with philosophical questions about the nature of science, religion, and their mutual relationship, at least in the mid-point of his career (Feynman, 1997 [1985], 242)². Though his feelings towards philosophers of science seemed less than amiable, Feynman articulated some major problems in accomplishing compatibility between the worldviews of religion and science, at least as he understood them. This dilemma is centred on the apparent asymmetry between certainty in the outlook of the modern scientist and the traditional religious believer. Though Feynman’s understanding of philosophy and religion was quite naïve, he remains an inspirational figure for many physicists, due to his charisma and renowned teaching style. His lectures on physics continue to be used by physics educators (Philips, 2013, 30-31) and his views on religion are influential to New Atheists. However little critical assessment of his religious claims is to be found in literature. After stating Feynman’s concerns, this paper will consider the religion-science problem from the perspective of critical rationalism. This will be represented through Karl Popper (1902-1994), the most prominent explicator of this methodology. His approach to religion was far more expansive

¹ Hawking & Mlodinow attempted to fuse Feynman’s QED theory with string theory to propose a Theory of Everything in this book, coupled with rejection of theism; their echoing condescension of philosophy is hence hardly a surprise.

² Feynman humorously claims here that “In the early fifties I suffered temporarily from a disease of middle age: I used to give philosophical talks about science... I also thought about the relation of science and religion”.

and inclusive than Feynman's. His later views on metaphysical theories inspired other critical rationalists to advance critical treatments of religion. It will be argued that these principles can be used to overcome what I will call the Feynman Problem and to create a better epistemological outlook for science and religion. The conflict between Feynman's claims and those of critical rationalists will be critically assessed. Feynman's assessment of the relationship between religion and science is a rationally deficient treatment and it will be argued that he would have fared better as a critical rationalist. It would have provided him with a better philosophical framework to reason with.

Feynman was famously irked by interdisciplinarians who claimed to have found successful solutions to problems that had been improperly stated (Feynman, 1997[1985], 242-245)¹. In keeping with this rational spirit of problem solving, we will now turn to formally stating Feynman's Dilemma.

The Feynman Problem

This section will explain 5 different facets of the Feynman Problem. He did not delineate these in a methodical fashion, and various scattered statements made by him about religion have been drawn upon in constructing this account. Though the way in which he stated the problems was less than ideal, it will hopefully be described here in the manner that Feynman intended it.

Feynman (Feynman, 1999, 23) believed that there is a difference between scientific answers and 'mystic' or philosophical answers². Scientists, he claimed, seek to further understand the unknown without prejudicing what they will discover, while mystics predefine what can be known and then claim to know it.

Yet definitive religious answers to thought-provoking mysteries, such as the difference in capability between humans and animals and the relationship between man and the cosmos, or God and the cosmos, seemed too plain and uncomplicated for a scientist like Feynman to tolerate (Feynman, 1999, 24). He suggested that such answers constrain the curiosity and love of perpetual perplexity that a scientist must cherish and harness as an impetus for research.

Reality, he claimed, consists of indefinite layers of complexity, which are reduced to platitudinous abbreviations by the faithful. The scientist's attitude of doubt is sufficiently sophisticated to empower enduring attempts at unpeeling the layers of an enigmatic cosmic onion (Feynman, 1999, 23). However, religion contrastingly satisfies the believer with a prematurely prosaic denouement, one that convinces him/her that he/she already comprehends all that is

¹ He alludes here to an ethics conference at which the solutions presented were tautological and without a clearly defined set of problems. Feynman thought the participants were "pompous fools.... I'm not going to get upset like that again, so I won't participate in interdisciplinary conferences anymore" (Feynman, 1997 [1985], 246).

² By 'mystic and philosophical' answers, Feynman meant scientifically untestable claims of all types, of which religious ideas are a particular subset. Within traditional religions, however, metaphysical claims are theoretical while 'mysticism' is typically more of a practice.

worthwhile to know. This is the first part of the Feynman problem, the matter of attribution of appropriate complexity to nature, and it's converse attenuation by religious thought.¹

The second part of the Feynman Problem pertains to the capacity for acceptance of mistakes. Religions appear to have conflicting "theories" about the same ideas, and adherents of each claim that their version is true (Feynman, 1999, 24). Feynman asserted that truth is forever equivocal and that the scientist does not face the same problem, as he/she has the option of alleging that nothing about current conflicting theories is true; not only this, but he/she can throw the entire framework into doubt with ruthless fidelity in the quest for capturing the true nature of reality.

Religions do not tolerate individuals contending that the entire system of belief is erroneous². Feynman believed that it is preferable to uphold continual doubt and "not knowing" instead of beliefs that are erroneous (Feynman, 1999, 24). Thus, the admittance of the total fallibility of knowledge of every kind is the second aspect of the Feynman Problem.

The third part of the problem concerns unquestioning acceptance of untested claims by religious people. While science focuses on establishing a claim's veracity through experimental tests, religious faith healing is accepted without being subject to stringent tests (Feynman, 1999, 107). Feynman believed that a scientist gathers evidence for a claim and tries to be objective in reporting collected data, and concludes what is necessary from it, not what he/she desires³. Religion encourages believing in what one desires, without an impetus for testing the claim. However, Feynman did implicitly accept that some theoretical religious beliefs, such as God's existence, cannot ever be tested (Feynman, 1999, 247).

Feynman believed that this results in a religious scientist holding two logically inconsistent worldviews. The only way to escape this is for scientists to hold discussions that "attack" religion and other untested claims, such as astrology (Feynman, 1999, 110-111)⁴. This can roughly be described as a problem of cognitive dissonance and lack of consistency around a scientific worldview.

The fourth part of the Feynman Problem, which he considered to be the most significant, is the problem of certainty. Feynman believed that a scientist is "never certain" (Feynman, 1999, 111). He/she is not concerned with whether theories are true or false, but rather with the *probability* that

¹ Feynman's claim here is an over-generalisation. It is very unfortunate that he was unaware of philosophical and religious thinkers with highly sophisticated views about the cosmos. One of my reviewers has suggested Einstein as an example of mature philosophical thinking.

² Religious believers may repeatedly change their views after critical assessment, hence the existence of different doctrinal schools of thought. Feynman may have a point here only with respect to excommunication based on rejection of core beliefs. Of course, it can be argued that those who challenge scientific consensus are also sometimes ostracised from the scientific community.

³ Some of the assumptions in scientific frameworks e.g., metaphysical ideas, are also untestable, unbeknownst to Feynman. I am again indebted to one of my reviewers for suggesting this.

⁴ Though this is what the 'New Atheists' more recently attempted to do, Feynman differs from them in his humility-he did not think that the views of scientists regarding unscientific subjects were necessarily cogent – "I believe that a scientist looking at nonscientific problems is just as dumb as the next guy-and when he talks about a nonscientific matter, he will sound as naïve as anyone untrained in the matter" (Feynman, 1999, 142).

they are true or false; Feynman thought that this was equivalent to the scientist making statements that have “varying degrees of certainty” (Feynman, 1999, 146).¹

Feynman suggests that religion is “unscientific” precisely because it does not encourage questions about the likelihood of its beliefs being true (Feynman, 1999, 111-112). He believed that scientific evidence informs the degree to which a claim is probably true or false. Yet perfect certainty one way or the other is never achieved. Feynman argued that religious people are unwilling to harbour any doubt whatsoever; they evade interrogation about their beliefs because questions naturally produce doubt². He thus advised becoming comfortable with a lack of knowledge and certainty (Feynman, 1999, 112).

The fifth part of the Feynman Problem relates to the search for ultimate meaning. He felt that human beings cannot know the purpose of existence, nor discern any essential meaning from it (Feynman, 1999, 114). When we believe that we know final eventualities, it occasions disastrous socio-political misadventures, manufactured with imposition of a definitive purpose in mind. Yet despite innumerable attempts, no consensus on the meaning of life has ever been achieved. Feynman concluded that the method of choice for containment of risky policy making is to deny that any ultimate meaning can ever be known (Feynman, 1999, 114).

Though he argued that universal education and universal financial security are useful for human progress, they are double edged swords that can lead to regress due to the possibility of teaching falsity and propagation of dangerous ideas (Feynman, 1999, 113-114). However, he felt an attitude of doubt to life’s purpose was conducive to optimal human development, without any drawbacks. It avoids presupposing what future human potentialities could be (Feynman, 1999, 114). This attitude, the “scientific way of progressing”, does not “decide upon the answer” (Feynman, 1999, 115). It continues to probe for answers undogmatically, while the religious attitude delivers answers without probing³. Such is the fifth aspect of the Feynman Problem, the problem of designation of ultimate meaning and purpose to life⁴.

A deeper understanding of the Feynman Problem involves appreciation of why he was interested in the science-religion debate. This can only be realised through appreciation of the *problem situations* that he was responding to. This article uses the term ‘Feynman Dilemma’ to collectively refer to the above stated problems *and* the provocative situations Feynman encountered. Here will be attempted a reconstruction of a few of the incidents which influenced his religious thought.

¹ Hence Feynman is a proponent of some form of Bayesian probability as a methodology for science.

² Some discussions of Christian faith today focus more on doubt than on certainty; Feynman seems to have been unaware of this; again, I am grateful to a reviewer for this point.

³ This is a strawman fallacy- Feynman is assuming that all religious claims are made by uncritical and poorly informed thinkers.

⁴ Feynman alleges that believing in any definite existential teleology is a path to totalitarianism. There are many objections to this:

That it is a kind of is-ought fallacy- should firm personal beliefs about the meaning of life necessarily lead to totalitarianism? He is confusing political ends with personal existential meaning or ends.

The claim that there must be a consensus on the meaning of life for it to be useful is a rather futile claim- ethical and spiritual matters are not democratic affairs; in fact, science is not democratic either.

Does believing in an ultimate purpose for life contradict a scientist’s work- especially since Feynman has conceded that science does not produce moral propositions of any kind?

Feynman encountered religious devotees who seemed uninterested in unravelling the laws of nature-their primary concern was to manipulate scientific claims in service of their existing dogma. It is to Feynman's credit that he did not restrict this observation to religious zealots-he also attributed the trivialisation of science to artists (Feynman, 1997 [1985], 225, 240-241). He felt that science had largely failed to capture the public imagination due to a flawed representation in early education (Feynman, 1999, 178), which meant that many adults (including some religious and artistic types) failed to reap benefits from it. Feynman spent some time working as an artist to try to overcome the lack of accurate scientific representations in that field (Feynman, 1997 [1985], 231), but did not quite dabble with religion in the same way. Nevertheless, he did stay in a Jewish theological seminary (Ibid, 1997 [1985], 246) and became superficially acquainted with the Talmud.

Feynman related an anecdote of his encounter with the problematic religious mind. In a conversation with trainee Rabbis, a scientific opinion on whether electricity is in fact a form of fire was solicited from him (Feynman, 1997 [1985], 247). Puzzled by what predicament these religious students were grappling with, Feynman answered "No...but what is the problem"? He discovered that their concern was regarding permission to use electricity on the Sabbath, given that they believed the Talmud to forbid the use of fire on that day. It was not the nature of electricity that fascinated them, but whether their religious legal tradition could interpret modern phenomena in such a manner as to avoid God's wrath¹.

Another anecdote is Feynman's scrutinization of a Hawaiian Buddhist proverb: "To every man is given the key to the gates of heaven; the same key opens the gates of hell" (Feynman, 1999, 142-143). He questioned how the key being advocated here could possess any worth, without simultaneous provision of well-defined guidelines on recognition of the entirely separate gates. Feynman's aim here was not to criticise religion or Buddhism per se, but to enquire how anything of value, including science, could possess such merit if it posed serious dangers to the world. However, this nonetheless subtly alludes to his view that vague religious teachings, bereft of a distinct and sophisticated morality, could have quite destructive effects, or at least could be superfluous to a human being's ethical development. Despite this, Feynman did think that traditional religious teaching held an advantage over scientific teaching- it repetitively underlined moral standards for all age groups, while a comparable platform did not exist for science, resulting in its undervaluation (Feynman, 1999, 185)².

Another situation that troubled Feynman was that many of his scientific colleagues were religious believers. He conceded that faith in an "ordinary" God and science were compatible, and

¹ Given that Feynman was a pragmatist, it is ironic that he found the jurisprudential pragmatism of these orthodox Jews objectionable.

² An example of the tendency of organised religions to provide continual moral and ethical admonitions is the function of the Holy Qur'an as a 'reminder' (or 'dhikr'), as stated for instance in Sura 73 verse 19 'Surely this is a reminder, then let him who will take a way to his Lord' (Shakir, 2002, 587).

that science could not disprove God's existence (Feynman, 1999, 247)¹. Nonetheless, he contended that it was extremely difficult to maintain congeniality and that it was not an equilibrium worth preserving. Holding doubt and uncertainty in the forefront of one's thought was indispensable to the scientific mind, while heresy to the holy mind. The scientist must insist that nothing is "proved beyond all doubt" and that truth is elusive; we can only know what is more probable or less probable (Feynman, 1999, 248). Scientists must not claim to know that their decisions are correct-only that they have tried their best².

Thus, for Feynman a scientist cannot say, if they are consistent, that 'there is a God'; they can only say that they are close to certain. A scientist can ask "how sure is it that there is a God?" but cannot ask "is there a God?" (Feynman, 1999, 249). Feynman's engagement with religious scientists convinced him that this was the real epistemological difference between science and religion.

His acquaintance with fellow atheist scientists convinced him that though religion is not a necessary condition for possession of morals, it is required for motivating their lasting implementation. He suggested that religions have three domains - metaphysical claims, ethical norms, and an inspirational function (Feynman, 1999, 252). He felt that some atheists acquired sublime ethics despite rejection of the divine (Feynman, 1999, 251). Yet only religion provided ample enough inspiration and admonition to continually act upon moral principles³, in addition to encouraging various creative arts. Science did not possess such functions. The frailty of human nature is such that holding theoretical moral values is no guarantee of achieving the drive to live by them. Though the belief in a divine metaphysics bolstered the ethics and inspirational features of religion, by connecting the individual with a wider cosmic reality, Feynman worried that science forced religion to 'retreat' when it sometimes corrected false metaphysical claims (Feynman, 1999, 253)⁴.

He noted that both religion and science were straining to answer metaphysical questions, but scientists alone accepted that their answers would be false (Feynman, 1999, 254). Religious metaphysical schemes demand certainty but will also be outed as false and will inevitably face conflict with science⁵. The situation at the heart of the Feynman Dilemma is that refutation of religious metaphysics hinders its inspirational function from being fulfilled, as man no longer feels connected to God and the cosmos (Feynman, 1999, 256). Feynman knew of no solution to the

¹By an "ordinary" God, Feynman meant the God of a traditional faith, such as the Abrahamic religions. This would contrast with a deistic God, a God that creates but then does not involve Himself in the affairs of His creation, a belief held by some post-Renaissance European thinkers.

² To faithfully represent Feynman's claims, his ambiguity with respect to the difference between theoretical claims and practical decisions has been left uncorrected. Feynman frequently obfuscates the line between knowledge claims and decision-making, due to his pragmatism.

³ Feynman's substandard account of moral philosophy has been highlighted to me by one of my reviewers.

⁴ This is the cardinal feature or core of the Feynman dilemma. Feynman felt that the scientific attitude and Christian ethics were logically consistent, but that scientific facts and religious metaphysics were not (Feynman, 1999, 256).

⁵ Metaphysical claims are unfalsifiable, according to critical rationalists, who would thus reject Feynman's claim. However, historical, and pragmatic principles of religions do undergo change under pressure from scientific and technological advances.

conundrum of diminishing religious beliefs with uncertainty while maintaining a sense of its essential truth. Thus, he was pessimistic about the merits of advocating a consistent and coherent dual religious-scientific worldview. Support for science as it stands would necessitate a full-frontal assault on religion, and vice versa (Feynman, 1999, 257).

Critically Rational Religion

So far Feynman's Problem has been aided by an orderly presentation, which suggests that he is right about the conflict between religious faith and scientific reason. We will now turn to the position of critical rationalists. Though this perspective does overlap to some degree with Feynman's claims, it will be argued that the more meticulously moulded account of science here provides a better explanation of the suppositive nature of knowledge.

Karl Popper, the most significant proponent of critical rationalism, fundamentally disagreed with Feynman about a religion-science conflict. However, we will first have to consider Popper's scientific views. Like Feynman, Popper regarded science as a great 'adventure' into the unknown (Popper, 2002 [1959], 15). He rejected inductive and probabilistic logic as a basis for scientifically true statements (Popper, 2002 [1959], 6)¹. Such truths are not pursued due to the need to find utterly confident answers, but because the answers provide provisional solutions to our problems via their explanatory power. Scientific statements are not science due to being verifiable, or fully justified by experience, but due to being experientially testable, and therefore falsifiable, at least in principle (Popper, 2002 [1959], 18, 22).

Conviction, or certainty, and its degrees are psychological processes and incapable of justifying a claim to knowledge. Thus, Popper distinguished between subjective states of mind and the logical relations which exist between statements of knowledge (Popper, 2002 [1959], 22). Certainty has no place in epistemology. Psychological states are subjective responses to experience. Testing scientific statements is an assessment of their truth properties but scientifically testing certainty in human subjects only establishes the presence or absence of degrees of certainty and cannot be a test of truth². Certainty can be neither true nor false as it is not a form of knowledge, nor even an associated epistemological feature of objective knowledge³.

Science has methodological rules, which are linked to the need to have theories that are always exposed to testing, and unshielded from falsification (Popper, 2002 [1959], 32-33). Popper suggested that scientific statements are thus only provisionally correct, if by testing they remain corroborated, that is corresponding to some basic statements (and unfalsified by them). The degree

¹ "For it is the tendency of inductive logic to make scientific hypotheses as certain as possible" (Popper, 2002 [1959], 271).

² Neurophysiologists and psychologists have developed experimental techniques that attempt to measure degrees of certainty (and uncertainty), as well as some of their triggers and consequences. See Polyportis, Kokkinaki, Horváth and Christopoulos (2020) and Seidel et al, (2015).

³ Popper (2002 [1959], 24) does not deny that certainty can be tested in psychology, nor that statements of objective knowledge can lead, in some cases, to subjective psychological states such as certainty (Popper, (2002 [1959], 23). However, what he denies is that certainty is a form of objective knowledge, or that it has any bearing on whether knowledge that we possess is objective or justified.

of corroboration of a theory may change over time and new basic statements emerge to falsify a claim, meaning that the truth of science is not absolute or final, even though truth is taken by convention to be a permanently fixed or timeless concept (Popper, 2002 [1959], 274-275). We will reject scientific claims in the future once falsifying statements crystallise, but this nevertheless takes us closer to truth by eliminating false possibilities, replacing them with new provisionally true ones. Popper called this provisional claim a conjecture, and the process by which scientific knowledge grows ‘conjectures and refutations’ (Popper, 2002 [1959], 278; Popper, 2002 [1963], 57, 65)¹.

Though only science is falsifiable, Popper expanded the scope of critical rationalism to philosophy, metaphysics, mathematics, and the humanities. Though philosophical and metaphysical theories are irrefutable by empirical tests, they can nonetheless be critically assessed based on how well they act as solutions to the given problem situation they were angled against (Popper, 2002 [1963], 233-234). After criticism exposes various ways in which an alternative theory acts as a better solution, the original conjecture is renounced. Philosophical and metaphysical knowledge claims are, like scientific claims, only provisional and fallible. Popper’s view that metaphysical theories can be developed in a positive direction based on criticism was a reassessment of his earlier belief that such theories are inert (Popper, 2011 [1945], 424-425).

This brings us to approaching religion as a critical rationalist. Popper argued initially that science and religion are unconflicted, if their proponents avoid encroaching on the territory of the other (Popper, 2012, 41-42). To suggest that science supports religion is damaging, as any scientific conjecture may be overturned and refuted. While it is considered a virtue to attack a scientific hypothesis so that it is superseded by a better one, it is regarded as impious to scorn belief in God. Popper hence originally rejected the idea that religion contains hypotheses or conjectures (Popper, 2012, 43).

Religion by default has normative elements, while science can only make factual claims in the form of descriptive statements (Popper 2012, 44-45). It is hence impossible for science to provide moral guidance. Popper’s view, like Einstein’s, foreshadowed Stephen Jay Gould’s later NOMA theory, which suggested that religion and science cannot ever be in conflict if their adherents avoid overstepping boundaries.

Popper also argued that atheism is an untenable position as all people are religious, in the sense that they have some preference as to a set of moral propositions and ethical choices (Popper, 2012,

¹ Popper said “Although it can attain neither truth nor probability, the striving for knowledge and the search for truth are still the strongest motives of scientific discovery. *We do not know: we can only guess*” (Popper, (2002 [1959], 278). Though ‘we do not know’ could easily be mistaken for a declaration of extreme philosophical scepticism, Popper was in fact only a moderate sceptic. He argued that scientific knowledge grows via refutation of provisional truths; hence we do possess knowledge, just not a certain and fully justified set of propositions. It is the latter that Popper was denying, thus allowing for the aim of science to remain truth.

45)¹. Rather than debating whether one should be religious, one should instead avoid ‘bad’ religions, in which Popper included fascism and totalitarianism (Popper 2012, 46). As some adherents of organised faiths make immoral decisions, it is imperative to avoid renouncing moral agency and the placing of one’s conscience in the hands of religious authorities conveying perverse religious interpretations (Popper, 2012, 47).

Popper saw the scientific attitude as profoundly religious and worthy of respect on this basis. It sought to unveil truth and to bequeath to humanity what was beyond their immediate personal interests (Popper, 2012, 47). Amongst the organised religions, Popper viewed Christianity and Islam as the most meritorious, as they sought to globally reduce suffering through the universal kinship of humankind (Popper, 2012, 46; Popper, 2011 [1945], 420). Religions that advocated the value of individuals were in keeping with reason, while collectivist ideologies that divided and enslaved people and entailed great suffering were anathema to reason (Popper, 2011 [1945], 423). Popper criticised Arnold J. Toynbee’s claim that the Prophet Muhammad compromised his rank as a Prophet by entering statecraft (Popper, 2011 [1945], 432). Popper saw no contradiction between religious leadership and political success, the latter of which would mean using the state to alleviate suffering of individuals.

What then of certainty? Popper criticised forms of religious certainty which guaranteed future outcomes without any regard for personal moral responsibility (Popper, 2011 [1945], 451). He contrasted such religious ‘historicism’ with a religious faith that gives hope via realisation of personal conscience and ethical obligations:

Historicism, I assert, is not only rationally untenable, it is also in conflict with any religion that teaches the importance of conscience. For such a religion must agree with the rationalist attitude towards history in its emphasis on our supreme responsibility for our actions, and for their repercussions upon the course of history. True, we need hope; to act, to live without hope goes beyond our strength. But we do *not* need more, and we must not be given more. We do not need certainty. Religion, in particular, should not be a substitute for dreams and wish-fulfilment; it should resemble neither the holding of a ticket in a lottery, nor the holding of a policy in an insurance company. The historicist element in religion is an element of idolatry, of superstition (Popper, 2011 [1945], 451).

Popper contrasted early Christian ethics, at a time when its followers were oppressed and martyred, with some of the religiously themed abuses of power which followed the spread of Christianity by the Roman empire. He considered theological justification of misrule to be “one of the worst kinds of human idolatries”, “superstition” and “pure blasphemy (Popper, 2011 [1945], 444). He saw the early martyrs as embodiments of the true “spirit of Christianity” (Popper, 2011 [1945], 446).

¹ Popper’s argument from universal morality is an argument against irreligiousness, not an argument against atheism per se. To argue against atheism would require metaphysical assertions, not merely moral ones- I thank one of my reviewers for inspiring this footnote.

By suggesting that the true values of faiths and of spiritual leaders like Jesus and Muhammad could be extricated (and even historically excavated) from later aberrations designed to service the priestly classes and rulers via promotion of dogmatism and authoritarianism, Popper raised the tantalising prospect of treating religious doctrines as provisional truths, or conjectures. With science, Popper said “the process may never be perfected, but there is no fixed barrier before which it may stop short. Any assumption can, in principle, be criticized. And that anybody may criticize constitutes scientific objectivity” (Popper, 2011 [1945], 402). Similarly, religious creeds and beliefs can be amended and further developed in a positive direction if they are subjected to appropriate critical assessment, in line with the procedure of conjectures and refutations.

After Popper, several philosophers have remodelled critically rational assessments of religion. Albert (1997, 234) examined how science can sway religion, while Shearmur (2010, 475-76) has considered how religion may influence science. Paya (2018, 52-53) has developed Popper’s later idea of criticizability of metaphysical claims into a framework of refutable religious conjectures.

Some Criticisms of the Claims of Feynman

Feynman’s views of religion and science have so far been presented in a relatively uncritical fashion. This section will assess some of the merits and faults of his claims. Unlike Popper, who was a thoroughly well-read philosopher, Feynman eschewed the study of philosophical works. In fact, James Gleick (2011[1992]), his biographer, has alleged that Feynman shunned reading altogether:

but pragmatic knowledge was Feynman’s specialty. For him, knowledge did not describe; it acted and accomplished. Unlike many of his colleagues, educated scientists in a cultivated European tradition, Feynman did not look at paintings, did not listen to music, did not read books, even scientific books. He refused to let other scientists explain anything to him in detail, often to their immense frustration. He learned anyway (12)

Gleick (2011[1992], 14) furthermore claimed that “He made islands of practical knowledge in the oceans of personal ignorance that remained”. The motive for raising this is not disparagement *ad hominem* but to highlight the fact that Feynman was at a considerable disadvantage in dealing with philosophy of science problems, unlike Popper. Nevertheless, there are great merits to Feynman’s framing of the religion-science quandary, and I will start by considering the similarities between his claims and those of critical rationalists.

Both Feynman and Popper regarded science as the noblest and highest of knowledge pursuits. They also both expressed a high degree of humility- Feynman with respect to his lack of expertise in religion (Feynman, 1999, 246), and Popper in his difficulty in attaining to a proper knowledge of God and how to speak of Him accurately (Popper, 2012, 50-51). Though Feynman professed atheism, as his parents had (Brian, 1995, 49; Gleick, 2011, 196), he did not attribute this belief directly to science. Thus, he considered it reasonable (though difficult) to maintain a theistic worldview alongside a scientific one. Likewise, Popper left his nominally Christian background with assent to agnosticism; nevertheless, he did not attribute his agnosticism to critical rationalism;

rather his doubt about the existence of God stemmed from his inability to resolve the problem of evil (Popper, 2012, 52).

Feynman and Popper both regarded the ‘Western’ tradition as inextricably linked to the scientific attitude and Christian ethics (Feynman, 1999, 256; Popper, 2011 [1945], 421) and both considered democracy to be in keeping with rationality and totalitarianism inhospitable to it (Feynman, 1999, 251-252; Popper, 2011 [1945], 28). They also both deemed religions to be serving a key ethical role in human affairs (Popper, 2011 [1945], 80), with science incapable of producing moral guidelines (Feynman, 1999, 254; Popper, 2012, 44). This formed an important cornerstone of their claim that science and religion can be complementary and non-contradictory. While Feynman noted that science can sometimes support religious metaphysical beliefs (Feynman, 1999, 254-255), he perceived that using science in this way usually leads to downstream refutation of the religious position, given that scientific hypotheses are always refuted (Feynman, 1999, 253-254). Popper believed that science could neither support nor refute religion, as it does not produce moral conclusions (Popper, 2012, 42), quite apart from the fact that metaphysical claims are irrefutable (Popper, 2002 [1963], 232).

Perhaps the most significant similarity with respect to the Feynman Dilemma were Feynman and Popper’s perspectives on certainty. Despite appearances, neither condemned some degree of certainty, but both considered absolute certainty to be abominable, in the sense of being incompatible with the growth of knowledge. Feynman (Feynman, 1999, 249) said “I do not believe that a scientist can ever obtain that view-that really religious understanding, that real knowledge that there is a God-that absolute certainty which religious people have”. However, he did not object to fainter theological certainty (Feynman, 1999, 249). Popper’s condemnation of absolute certainty was more severe than Feynman’s (Popper, 2011 [1945], 451).

However, Popper made it clear that his criticism was directed to blind following of religious authoritarianism and not to religious interpretations which were based on “personal responsibility and freedom of conscience” (Popper, 2011 [1945], 80). His frequent declaration of his own personal certainty indicate that he was not opposed to certainty in a general sense (see for instance Ibid, 2011 [1945]; 82, 85, 98; Popper, 2012, 52)¹.

Let us now turn to criticisms of Feynman’s claims. To achieve this, here is a summary of the 5 facets of the Feynman Problem, which are ‘problems’ because each is allegedly countered by religion:

P¹: The need for attribution of appropriate complexity to nature (the ‘infinite onion layer conundrum’)

P²: The need for a total fallibilist epistemology with approval of the value of mistakes

¹ The certainty that Popper spoke of was a subjective psychological state-he was not making a knowledge claim as he did not believe that certainty has any epistemological significance.

P³: The need for logically consistent integrative worldviews, as opposed to worldview cognitive dissonance

P⁴: The need for perpetual uncertainty of belief

P⁵: The avoidance of designation of an ultimate meaning and purpose to life

(P= Problem)

P¹

Does religion deter attribution of infinite complexity to nature, and reduce its mysteries to naught, thus acting as an impediment to the curiosity of a scientist? This may hold true for simpler, relatively naïve, or even fundamentalist readings of religion. There may well be religious believers who settle for the most parsimonious of explanations about the nature of reality.

However, this does not seem to hold true as a specific property of ‘religion’. On the contrary it appears that accepting what is convenient, self-satisfying and confirmatory of existing biases is a commonplace psychological weakness in human society (Nickerson, 1998, 208-209). This is not only the case with religious people, but is also found throughout the educational system, legal system, in medical practice, socioeconomic policy making and even in mathematics and science (Ibid, 1998, 189-197).

Though Feynman is right to claim that the scientific attitude aims to oppose confirmation bias and oversimplifications, he does not distinguish between the aims of science and the psychological failings of scientists, who are after all, human beings. Scientists are capable of the same monotony and primitiveness of claims as anyone else.

For instance, the ‘New Atheists’ seem to have ignored Feynman’s advice to avoid underestimation of complexity. This group regularly accuses religionists of violating Occam’s Razor through overly elaborate theological explanations of reality (Dawkins, 2006, 109-114, 146-147, 158)¹. This philosophical principal advocate's abstention from multiplying entities beyond necessity-however it lacks universal applicability within science, and can sometimes hinder scientific progress (Ball, 2016). Ironically, invocation of Occam’s Razor allows religionists to accuse New Atheist scientists of underestimating complexity, instead settling for reductionist accounts of natural processes.

Many innovative scientists have been religionists, or even religious scholars, historically speaking, from Naṣīr al-Dīn al-Ṭūsī to Gregor Mendel. This jars with Feynman’s claim that religious belief hinders exploration of the cosmos. Furthermore, some religious cosmologies are so complex that they require several years of study to properly comprehend, such as the theories of Ibn ‘Arabī, Mir Damad and Mullā Ṣadrā. Given the wide availability of such ideas in multiple languages in modern times, the caricature of religion as necessarily simplistic seems anachronistic. Even the religious ‘layperson’, will typically be exposed to discussions about the problem of evil,

¹ As Pigliucci (2013, 148) has pointed out, Dawkins’ argument from improbability is a use of Occam’s Razor against the so-called ‘God Hypothesis’.

justice, and conflicts between freewill and determinism. These are discussions which scientists and philosophers also continue to grapple with.

Thus, the P^1 branch of the Feynman Problem is truly pertinent only with respect to the uncritical religious believer; the attitude of such an individual may conflict with the scientific need to uncover the many complex processes governing nature. However, it does not apply to the critically rational religionist (which will be further explained below under Solution 1) and many forms of religious interpretation seem to fit in well with a complex cosmos.

p²

Feynman deserves credit for disapproving of the suppression of the search for mistakes in religious thought. However, he has framed this problem with an obtuse, flawed explanation. He has claimed that one cannot follow a religious theory without knowing which is true. Here he has shirked on the human rational responsibility to choose between theories after critical assessment. Though Feynman recommends a lack of definite methodology for science, favouring a kind of anarchism akin to Feyerabend (1993, [1975], 13-14), he still demands some definite principles by which he can know which religious claim is true. However, for science he says that one must not claim to have found truth. These demands are at odds with each other.

The idea that religious claims are hopelessly indistinguishable, is the forte of relativists or epistemological nihilists, as well as a common anti-religious argument. But it does not fit well with realism. For instance, Popper argued that monotheism could be selected over polytheism on account of both rational and psychological factors (Popper, 2012, 49), despite there being some useful values in polytheistic traditions.

Unfortunately, Feynman, despite being a scientific realist, adopted a critical lassitude when it came to selection between religious theories. But he was no doubt correct that religious dogmatism is opposed to a scientific attitude. Wherever we see religious creeds being imposed as unquestionably true, we find that it leads to restriction of freedoms. The Abbasid government of al-Ma'mūn punished by death or torture questioning of the belief that the Qur'an is created (Melchert, 2021, 201-208). Al-Ghazzālī (2000, 226-27) declared peripatetic philosophers to be heretics due to disagreeing with the theological position he officially espoused on behalf of the Seljuk Turk rulers of Baghdad¹.

Orthodoxies imposed by political fiat are a notorious example of how intellectual and legal liberties can be curtailed. Permission to question dogmas and to tolerate alternative theories is essential to the growth of religious knowledge. Fortunately, many religious traditions do exist which encourage challenges to existing doctrine, such as the Twelver Shi'i notion of keeping the 'gate of ijtihad', or research, open. Some thinkers influenced by critical rationalism have contributed to this school of thought (Takim, 2022, 96-220).

¹ Though Al-Ghazzālī (2000, pp. xxii-xxiii) claimed that his book did not endorse any theological doctrine, the fact is that the Seljuks benefitted from the condemnation of peripatetic philosophy, which was being promoted by the Ismaili political rivals of the Seljuks.

P³

Feynman's lack of familiarity with critical rationalism disadvantaged him here. He seems to have desired a kind of methodological and epistemological monism, where every aspect of reality is explored in the same manner. Of course, this is impossible. Science and religion have different aims- the former to discover facts of nature, the latter to provide metaphysical, ethical, and spiritual guidance. It seems unreasonable to require a single approach for the achievement of all these aims. Feynman's impression of objectivity in science is erroneous- he argues that it lies in the objectivity of the scientist, who tries his/her best to avoid reaching predetermined conclusions. Here he would have benefitted from realising that objectivity lies in a theory being subjected to tests, and more generally to critical scrutiny, irrespective of the individual scientist's attitude. Both religious scholars and scientists could try to avoid bias, but objectivity of knowledge does not lie in this¹.

Here critical rationalism provides an epistemological bridge between science and religion- even though religious doctrines are not usually falsifiable, they can be criticised. This is possible despite the attitude of the advocate of those doctrines. If science can be tested, and religious theories can be criticised, objective knowledge can be extended in that field. The partialities of individual theorists would not hinder this process.

P⁴

Here we deal with the thorniest part of the Feynman Problem- that scientists should always be uncertain about all things, should deny knowledge of a claim's truth or falsity and should only affirm probabilities.

Apparently, Feynman thought that relative degrees of certainty were directly relevant to the search for facts and laws of nature. However, this view has been strongly contested². Certainty and truth are not directly correlated, either positively or negatively. This is obvious from the simple observation that some individuals are certain about false hypotheses or reject true hypotheses with the assertion that they are completely uncertain about them. Certainty is a psychological mind-state, while knowledge and truth are epistemological categories (Paya, 2018, 19).

Feynman claims that absolute certainty is quite damaging for science. Yet the physicist Fred Hoyle maintained until the end of his life that a falsified steady state theory was correct, with certainty, long after its displacement by big bang cosmology (Gregory, 2005, 336-38). Did this

¹ Complete avoidance of bias is impossible -see Popper (2011 [1945], 468-469) on counteracting bias through criticism and (2011 [1945], 278-279) for criticism of Baconian eliminative induction.

² Seeking assurance about our statements and confusing this with logical relations between statements was a common notion in past models of logic (Popper, 2002 [1959], 80). Feynman puts forward a theory of probability which is subjective, which Popper described as "psychologistic" (Ibid, 2002 [1959], 135). Here probability is equated with subjective feelings of certainty and belief, and their opposites. This contrasts with an objective probability theory, which would instead focus on stating the relative frequency of incidence of events within a given sequential group (Ibid, 2002 [1959], 137). In footnote 3 of (Ibid, 2002 [1959], 172), Popper points out that degrees of certainty of knowledge are a conventionalist idea as they do not necessarily have to be paralleled with the fractions from 0 to 1, as would be the case in an objective relative frequency theory.

harm science? Evidently not, as most of the cosmology community refused to accept Hoyle's claims. It may have harmed Fred Hoyle.

Science is supposed to be a pursuit of truth, not a psychological confidence building exercise (Miller, 1994, 11-12). It thus does not matter much if some scientists insist on being certain about their own claims. In the long run, those theories survive which are corroborated by tests.

There is a positive side to certainty, which Feynman does not fully consider. Certainty can encourage perseverance on an arduous path that we have chosen to undertake. An ordinary scientist presumably is certain that the principle of causality is valid¹, and that the instruments they use in their experiments do give verifiable readings, at least some of the time. If they did not believe in this with certainty, it's hard to imagine that they would want to come into work in the morning. However, this surely does not prevent them from questioning the validity of any specific scientific hypothesis if they remain open to cogent criticism. Certainty with respect to some matters does not by itself act as a pervasive inhibiting constraint on the scientist.

Similarly, it appears that religion requires certainty about some basic preliminaries for a believer to practice it-for instance that God exists, and that revelation to a person is possible. Yet this does not prevent that believer from questioning every religious interpretation under the sun.

One can go further than this and even say that religions demand uncertainty, both relative and absolute, for some beliefs. For instance, Islam advises its followers to be moderately uncertain about the timing of a final Day of Judgment, and of the nature of the Rūḥ-spirit or soul (Shakir, 2002, 158, 268 [Sura 7, 187; Sura 17, 85]). However, it demands absolute uncertainty about the essence of God, unlike His attributes and actions (Al-Ṣadūq, 2009, 898, 901).

Feynman spoke of:

the scientific spirit of adventure-the adventure into the unknown, an unknown which must be recognized as being unknown in order to be explored; the demand that the unanswerable mysteries of the universe remain unanswered; the attitude that all is uncertain; to summarize it-the humility of the intellect". (Feynman, 1999, 256)

Substitute 'scientific spirit' with 'religious spirit' and this would function well as a statement about the nature of God's essence in Islam. A believer may be certain that a God exists yet is ordered by religion to be completely uncertain as to exactly what He is. Feynman underestimated the complexity of religious beliefs and opted for a stereotyped monolithic religion in which certainty alone prevails.

¹ My reviewer has suggested that causality must be further qualified by whether one accepts a deterministic or indeterministic framework. While this is true, it seems that many scientists accept some form of causality without deeper reflections on its philosophical implications. I mean here only to comment on it as a psychological phenomenon, in relation to certainty, and not on its philosophical credibility.

P⁵

Feynman's association of a lack of assigned meaning or purpose to life with scientific curiosity and scepticism makes about as much sense as his associating certainty with the quest for truth. There is no direct correlation.

Critical rationalists, who are scientific realists, argue that life can be assigned a meaning by us (Popper, 2011 [1945], 450). This meaning does not have to be fixed and can change or evolve over time as our values and understanding of our reality grows. What they oppose is suppression of consideration of evidence that is contrary to our assumptions. Hence Popper condemned the 'historicism' of Hegel and Marx for allegedly creating a predetermined future outcome which is unalterable. All facts are made to fit into this narrative, while inconvenient contravening events are ignored or dissimulated in an uncritical manner¹.

Feynman seems to agree with the socio-political damage that 'historicism' entails. However, his insistence that a scientist must lack any belief in a definite overarching purpose to life could descend into nihilism, rather than the psychological flexibility that he hopes for. A nihilist could choose to reject science as meaningless or could deal with it as a conventionalist exercise. However, a critical rationalist approach to meaning and purpose does not threaten science and a belief in objective truth.

We will finally turn to two further tentative critically rational solutions to the problem of certainty.²

First Solution: Conjectural Religion

Though the founder of a religion, such as Jesus or Muhammad, brings a vital new faith that attracts followers, the 'religion' that is later created out of the claims of their followers is partly a social construct. Religious theories are conjectures that can be refuted if found to be unsuitable representations of the original spirit of the faith, or unable to meet the needs of its community. Amongst the questions that could be asked of a theory when criticising it are:

Does the conjecture solve the problem situation it claims to meet?

Is it consistent with core early spiritual, moral, and ethical values of that faith?

Can it be validated by the core scripture of that faith?

There is a legion of other lines of critical inquiry. While Popper argued that metaphysical theories could be criticised and Feynman also regarded religious claims as 'theories', Feynman was despondent about choosing between divergent claims. However, adopting a critically rational

¹ A reviewer has pointed out the following: 'There are two different things involved in Popper's criticism: (a) his view that there is no intrinsic teleology to history; (b) his view that Marxists typically either did not expose their views to criticism, or reacted in evasive ways when there were criticisms'.

² Critical rationalism is a deductive methodology which rejects justificationism, induction, positivism and the indubitability of knowledge claims. Knowledge grows only by criticism, and can only be considered provisional, or the best current understanding. Scientific claims can be refuted by experiment, while metaphysical claims cannot. Nevertheless, the latter can be further developed and mended through criticism, and one can completely reject a metaphysical theory when it seems to be taking one further away from truth.

fallibilist epistemology allows one to hold hope of selecting better theories. Critical rationalists are moderately sceptical but radically optimistic about the search for truth¹. They believe that progress on this path is possible through refutation of unsuitable assertions.

Would certainty about religion hinder a believer from such criticism? It might if it climbs to the level of absolute certainty, which often descends into dogmatism. However, a fallibilist would maintain an openness to criticism, which would stifle the development of intransigence. They would make their claim about religion available for assessment by others. The certainty of a believer would not prevent others from criticising their assertion, much as Popper suggested that the progress of science is not hindered by the undue certainty of individual scientists (2011 [1945], 399).

Feynman (1999, 253) claimed that if factual scientific claims corrected a religious theory, this would mean that religion was in 'retreat'. This is an overly pessimistic judgement-faiths do not retreat when religious theories are refuted any more than scientific revolutions result in denunciation of the totality of science. However, complete overhauls of some aspects of religious systems, such as legal frameworks, can and do occur, though it is beyond the scope of this work to provide examples of this.

Religious theories can (and should) be criticised and supplanted according to critical rationalists. Religions are not monuments on the mantelpiece that we simply take or leave as they are, as Feynman thought. Rather we must work within a religious tradition to improve upon its claims if we have a choice of competing narratives or interpretations with respect to the solution to a problem situation.

Second Solution: The Trifurcation of Psychologistic Certainty, Pragmatic Conviction and Epistemological Humility

Popper used the term 'conviction' interchangeably with certainty (2002 [1959], 22-25). While this is linguistically unobjectionable, another model of conviction can be proposed to help solve the apparent contradiction between believing in certainties of faith and the uncertainties of science, or uncertainties of religion together with maintaining faith in its truth.

Certainty is a psychological state related to one's feelings about a belief, or set of beliefs, being true. Conviction is a pragmatic commitment to act in a particular way. Epistemological humility is concerned with the pursuit of truth, despite knowing that our claims may well miss the mark and will be strewn with some errors.

Beyond prima facie considerations, there is no necessary logical or causal relationship between these three concepts. Though it is often assumed that certainty must lead to conviction, this is not

¹ The moderate scepticism of Popper is like the 'mitigated scepticism' of Hume (this contrasts with the 'excessive scepticism' of the classical type-see Blackburn, 2016, pp. 429-30). Both Popper and Hume regarded common sense and traditional beliefs as starting points for a higher rational journey. The difference, however, is that Hume became pessimistic about the possibility of succeeding in any advance to truth due to being unable to solve the problem of induction. While Popper was 'radically optimistic' (my terminology) as he believed that one can gain proximity to truth by abandoning induction and through working perpetually with unjustified knowledge.

the case. An employee can be 100% committed to observing a workplace directive to escape being disciplined, and yet have zero certainty about the moral merits of such a regulation. Conversely a theist may feel that they have absolute certainty about God's existence, and yet may lack any conviction to alter their behaviour based on this belief, as may see with some nominal Muslims or Christians, or in the case of some deists.

Just as there is no necessary causal relationship between certainty and conviction, there is also no such relationship between these and a fallibilist epistemology¹. A religious critical rationalist can be uncertain about theoretical aspects of their faith, and yet act with *complete* conviction with respect to some pragmatic aspects of faith. Maintaining a critical attitude to theories produced by their co-religionists can run in parallel with conviction, in the hope that practicing their faith will increase their knowledge and understanding. There is no contradiction here, and no ensuing cognitive dissonance. Full conviction is often taken as conflicting with epistemological fallibilism, though it does not have to.

It is often assumed that the Qur'an recommends certainty alone-but this is a misunderstanding, as it advocates conviction: 'Say: Oh, my people! Act according to your ability; I too am acting; so, you will soon come to know...' 'So, act, we too are acting' (Shakir, 2002, 130, 471; Sura 6, 135 and Sura 41, 5). This conviction aids the pursuit of knowledge. Psychological uncertainty and epistemic humility, when combined with pragmatic conviction, intensifies the search for truth. Practical conviction need not stand in the way of epistemic fallibilism, be it with respect to religious or scientific knowledge².

Feynman confused certainty with truth, while Popper separated psychological and epistemic categories to differentiate personal confidence strategies from the pursuit of truth. This section has argued that there is a need to further separate psychological mind-states from pragmatic commitments. This further distinction will aid understanding of why religious 'certainty' is not in conflict with openness to criticism and a fallibilist approach to knowledge. Thus, the core enigma enabling the Feynman Dilemma, that strong scientific persuasions weaken religious metaphysics and its moral inspirations, and vice versa, can be dissolved.

Conclusion

The Feynman Dilemma is a paradigmatic example of a prominent 20th century physicist's personal struggle to reconcile faith and reason- and failing to do so. His ideas, which represent a kind of

¹ The argument being made here is not that knowledge, certainty and conviction do not influence each other; of course, they can, and often take a similar trajectory- for instance greater knowledge can be accompanied with greater certainty, which can in turn be linked to greater conviction. However, there is no necessary relationship between them. This is obvious from the simple observation that increased knowledge can be accompanied by a lowering of certainty. Likewise low levels of certainty can be associated with high levels of conviction. Though this all may be paradoxical and contrary to common sense, it indicates that there is no self-moving inevitability about the relationship between knowledge, feelings, and actions.

² This will be elaborated upon in an upcoming paper by the author called 'A Reinterpretation of Certainty in the Qur'an and Islamic Tradition from a Critically Rational Perspective'.

proto scientism, would go on to influence later generations of physicists as well as the full-fledged scientism of some of the Neo-Atheists¹.

Unfortunately, Feynman's problem situation was such that he encountered several fundamentalist or dogmatic religious believers. This, combined with his lack of sufficient background research on advanced theology, limited his insight into solutions to apparent religion-science conflicts. Furthermore, despite Feynman's scientific expertise, his antipathy to the philosophy of science meant that he could not benefit from more erudite representations of the nature of scientific knowledge and how it related to truth.

His claims demonstrate an inadequacy of understanding of the intricacies of more refined philosophical and religious thought. He constantly engages in stereotyping of religious beliefs. He would have been able to acquit himself more honourably through engagement with religious scholars and philosophers of science.

However, unlike some of his later admirers, Feynman strongly believed that religion had great moral and inspirational functions that science lacked. He also candidly admitted his lack of acquaintance with relevant religious and philosophical literature, marking him out as comparatively intellectually honest. He was open to criticism and was a fallibilist. He also desired that religionists and scientists peacefully co-exist. Thus, the problems proposed by Feynman, albeit minus solutions, are more conducive to inter-faith dialogue between believers and non-believers, as well as between scientists and religionists, than the more hostile approach of his successors.

Additionally, this research piece has argued that Feynman's beliefs about science have some common ground with Popperian epistemology². However, the lack of concord, especially with respect to certainty, restricted Feynman's ability to solve the problem of compatibility between science and religion. Though critical rationalists are of various religious persuasions, achieving consistency between faith and reason is undemanding in a critically rational framework. More research needs to be undertaken into the significance of certainty and conviction in religion, which should aid full resolution of the types of conflict proposed by Feynman. Feynman would have fared much better in his evaluation if he had been a critical rationalist.

Both scientists and religious believers maintain a pragmatic conviction regarding the possibility of knowing reality through the methods of their respective fields. In fact, even some philosophers hold such a conviction, resulting in an optimistic outlook. Nevertheless, conviction is not an epistemic category such as truth, nor a purely psychological one, as certainty is³. It is

¹ See Pigliucci (2013, 142-146) for more on why New Atheism is in fact largely a movement characterised by scientism.

² It is obvious that Feynman accepted many of the proposals made by modern philosophers of science, such as the falsification principle and tentative nature of scientific knowledge, despite his antagonism regarding study of philosophical works.

³ Both conviction and certainty belong to Popper's World 2. However, certainty is a type of feeling or mental state, the absence of which creates anxiety and unease; while conviction is more of a behavioural disposition that grows out of our state of consciousness and obligates us to interact in a particular way with World 1 or World 3. Absence of conviction does not usually create anxiety. Hence conviction is a different type of mental state to certainty and is also not a purely environmentally conditioned behavioural disposition in the behaviourist sense, though it pushes one to interact in a specific way with the environment.

uncontradictory to be critical in epistemological terms of scientific and religious knowledge claims, while simultaneously embracing conviction in scientific and religious methods and methodologies.

Without pragmatic convictions to act upon, we would fail to acquire the high degree of lived experience necessary to make the most effective and interesting criticisms of our claims. Critical assessment takes place against a background of traditional ideas and experiences which are deeply intertwined into the human psyche, and with our practices.

Feynman saw some artists and religious people as uninterested in science- he tried to solve this by becoming an artist and saw that through his art he could express himself scientifically. However, he did not replicate this experiment with religion, and thus did not attain realisation of how to possess the conviction of a religious believer without detriment to his scientific outlook. A critically rational attitude to science and faith can alleviate disharmony through better distinctions of psychological, pragmatic, and epistemological aims.

References

- Albert, H. (1997). The conflict of science and religion: Religious metaphysics and the scientific world view as alternatives. *Journal of Institutional and Theoretical Economics (JITE)/ Zeitschrift Für Die Gesamte Staatswissenschaft* 153(1), 216-234. <https://www.jstor.org/stable/40753000>
- Al-Ghazālī. (2000). *The incoherence of the Philosophers*. Brigham Young University Press, Translated by Michael E. Marmura
- Al-Ṣadūq, S. (2009). *Kitāb al-tawḥīd (the book of divine unity)*. The Saviour Foundation-Jamkaran Publication, Eds. Morrow, John Andrew; Rizvi, Ali Raza, Vittor, Luis Alberto & Castleton, Barbara
- Ball, P. (2016). The tyranny of simple explanations. *The Atlantic*. Retrieved from <https://www.theatlantic.com/science/archive/2016/08/occams-razor/495332/>
- Blackburn, S. (2016). *Oxford dictionary of philosophy*. 3rd ed, Oxford University Press.
- Brian, D. (1995). *The voice of genius: conversations with Nobel Scientists and other luminaries*. Perseus Publishing.
- Dawkins, R. (2006). *The God delusion*. Bantam Press.
- Dennett, D. (2006). *Breaking the spell*. Penguin Books.
- Dyson, F. (1998). *Imagined worlds*. Harvard University Press.
- Einstein, A. (1954). *Ideas and opinions*. Crown Publishers, Inc.
- Feyerabend, P. (1993, [1975]). *Against method*. 3rd ed. Verso.
- Feynman, R. P. (1997 [1985]). *Surely you're joking, Mr Feynman: Adventures of a curious character*. Online edition Vo1.2, updated 24.2.2010
- Feynman, R. P. (1999). *The pleasure of finding things out*. Ed. J. Robbins, Perseus Books.
- Gleick, J. (2011 [1992]). *Genius*. Open Road Integrated Media.
- Gregory, J. (2005). *Fred Hoyle's universe*. Oxford University Press.
- Hawking, S. & Mlodinow, L. (2010). *The grand design*. Bantam Books.
- Melchert, C. (2021). The inquisition outside Baghdad. *Journal of the American Oriental Society* 141(1), 201-210. <https://doi.org/10.7817/jameroriesoci.141.1.0201>
- Miller, D. (1994). *Critical rationalism: A restatement and defence*. Open Court.
- Nickerson, R. S. (1998). Confirmation bias: A ubiquitous phenomenon in many guises. *Review of General Psychology*, Vol. 2 (2), 175-220. <https://doi.org/10.1037/1089-2680.2.2.175>
- Paya, A. (2018). *Islam, modernity and a new millennium: Themes from a critical rationalist reading of Islam*. Routledge: Taylor and Francis Group.

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- Philips, R. (2013). In retrospect: the Feynman lectures on physics. *Nature*, Vol. 504, 30-31. <https://doi.org/10.1038/504030a>
- Pigliucci, M. (2013). New Atheism and the scientific turn in the atheism movement. *Midwest Studies in Philosophy*, 37(1), 142-153. <https://doi.org/10.1111/misp.12006>
- Polyportis, A., Kokkinaki, F., Horváth, C., & Christopoulos, G. (2020). Incidental emotions and hedonic forecasting: the role of (un)certainly. *Frontiers in Psychology*, 9(11), 1-17. <https://doi.org/10.3389/fpsyg.2020.536376>
- Popper, K. (2002 [1959]). *The logic of scientific discovery*. Routledge Classics.
- Popper, K. (2002 [1963]). *Conjectures and refutations*. Routledge Classics.
- Popper, K. (2011 [1945]). *The open society and its enemies*. Routledge Classics.
- Popper, K. (2012). *After the open society*. Eds. Shearmur, J. & Turner, P. N., Routledge Classics.
- Seidel, E., Pfabigan, D. M., Hahn, A., Sladky, R., Grahl, A., Paul, K. ... & Lamm, C. (2015). Uncertainty during pain anticipation: the adaptive value of preparatory processes. *Human Brain Mapping*, 36(2), 744-755. <https://doi.org/10.1002/hbm.22661>
- Shakir, M. S. (2002). *Holy Qur'an*. Ansariyan Publications.
- Shearmur, J. (2010). Why the 'hopeless war'? Approaching intelligent design. *Sophia*, 49(4), 475-488. <https://doi.org/10.1007/s11841-010-0221-5>
- Stenger, V. J. (2012). *God and the folly of faith*. Prometheus Books.
- Takim, L. (2022). *Shi'ism revisited: Ijtihād & reformation in contemporary times*. Oxford University Press.
- Trubody, B. (2016). Richard Feynman's philosophy of science. *Philosophy Now*, 116, 10-12. Retrieved from https://philosophynow.org/issues/114/Richard_Feynmans_Philosophy_of_Science