

**KARL POPPER'S CRITICAL RATIONALISM AND THE  
POLITICS OF LIBERAL-COMMUNITARIANISM**

---

**A thesis submitted in partial fulfilment of the requirements for the Degree of Doctor of  
Philosophy in Philosophy in the University of Canterbury**

**By**

**Oseni Taiwo Afisi**

**Department of Philosophy and Political Science**

**University of Canterbury**

**2015**

---

## **Abstract**

Whether there are prospects for a liberal-communitarian philosophy with aims and objectives that enhance Karl Popper's project of the open society I here argue in the affirmative. Such a philosophy promotes both self-determination by individuals and community enhancement of individual well-being. My argument for a liberal-communitarian philosophy develops out of Popper's critical rationalism, exploiting the fact that in Popper's philosophy, science and politics are intertwined and each is defined by both individual and social elements. In particular, Popper's politics of liberalism are derived from the ethical and epistemological core of his critical rationalism, the latter originating in his philosophy of science, the former preceding it. Individuals become socially embedded with others as they engage in mutual criticism that is based upon a rational understanding of mutual respect, unity, and tolerance. I defend ontological claims about the social nature of the self and normative claims about the value of community which together make intelligible the idea that the self cannot exist outside of the context of community. This implies that the very consciousness of the self is constituted by interaction, interconnectedness and interrelationship with others. How well a philosophy that upholds individualism marries with the idea of the community, I show that Popper's critical rationalism fruitfully addresses. Society must protect the individual's capacity for rational criticism. Rational criticism is mutualistic. Critical rationalism as regards both science and politics is implicitly communitarian. Although 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 emphasise social and community togetherness.

<b>Abstract.....</b>	<b>iii</b>
<b>Preface.....</b>	<b>v</b>
<b>Acknowledgements .....</b>	<b>ix</b>
<b>Chapter One: Discovering Karl Popper: A Biographical Context .....</b>	<b>1</b>
Introduction .....	1
Popper, philosopher of science.....	3
On the Heroic Age of Science.....	5
Some influences of Kant .....	11
Interaction with Wittgenstein .....	13
Influence of the Vienna Circle .....	17
On the demarcation of science .....	23
Summary: the context of Popper as philosopher of science.....	24
Popper: Personal, Social and Political influences .....	25
<b>Chapter Two: Popper’s Critical Rationalism: Fallibilism and Inter-Subjective</b>	
<b>Criticism.....</b>	<b>31</b>
Introduction .....	31
On Critical Rationalism.....	36
Induction, Corroboration, and Severe Testing of Hypotheses .....	39
Wesley Salmon’s Concept of Ampliative Inference .....	46
Clark Glymour’s Idea of Bootstrap .....	48
David Miller’s Restatement and Defence of Critical Rationalism.....	49
Conclusion.....	52
<b>Chapter Three: Unity of Method combined with Methodological Pluralism .....</b>	<b>54</b>
Introduction .....	54
Methodological Pluralism in Science.....	57
Epistemic pluralism: The rationality question .....	61
Popper’s Pluralistic Methodology .....	68
Value of cross-cultural polylogue: The argument.....	70
Conclusion.....	70
<b>Chapter Four: Popper on Science of Society</b>	
<b>— A Refutation of Historicism .....</b>	<b>73</b>
Introduction .....	73
Essential Themes of Popper’s Philosophy of Politics .....	77
Popper’s Refutation of Historicism.....	81
Popper’s Critique of Holism .....	86
Popper on Piecemeal Social Engineering.....	88
Popper on Freedom and Negative Utilitarianism .....	90
“New” Historicism .....	91
Conclusion.....	91
<b>Chapter Five: Popper on Marx and the Development of Popper’s Liberalism.....</b>	<b>93</b>
Introduction .....	93
Marx on Scientific Socialism .....	95
Popper on Scientific Marxism.....	97

Should Marxism be defended against Popper’s Critique? .....	100
Development of Popper’s liberalism.....	103
Conclusion.....	107
<b>Chapter Six: Popper’s Social Engineering: Piecemeal or ‘Many-Pieces-at-once’?.....</b>	<b>109</b>
Introduction .....	109
Understanding Piecemeal Engineering .....	111
Is Engineering Science Piecemeal?.....	113
Piecemeal Engineering as a Scientific Approach.....	115
Piecemeal Social Engineering as a Method of Changing Society .....	119
Towards Social Engineering: Piecemeal or ‘Many-Pieces-at-once’? .....	122
Conclusion.....	127
<b>Chapter Seven: On Karl Popper’s Concept of Freedom: Individual and Social</b>	
<b>Aspects .....</b>	<b>130</b>
Introduction .....	130
Popper’s Apparent Individualism .....	134
Popper on Freedom .....	137
Argument from Tolerance.....	141
The case for social Freedom.....	144
Conclusion.....	149
<b>Chapter Eight: Beyond the politics of Liberalism .....</b>	<b>151</b>
Introduction .....	151
Beyond Popper’s Liberalism: The Social Dimension .....	152
Differentiating the Social Dimension from the Cultural.....	155
Liberal-Communitarianism: A New way of Thinking .....	159
Conclusion.....	165
<b>Chapter Nine: Conclusion.....</b>	<b>167</b>
<b>Bibliography .....</b>	<b>172</b>

## Preface

Karl Popper was systematic in his emphasis upon criticism, deriving from that orientation not only a philosophy of science but also a political philosophy and a philosophy of life. The present evaluation of Popper considers with what philosophy people might best address contemporary political problems. Problems in politically very troubled parts of the world are of concern to me. In this dissertation I argue not that Popper provided the best philosophy, but that he almost did. Ideas of Popper's own are used here in order to save Popper from some of his own mistakes. When this is done, a political philosophy eventuates that I believe is best. To address contemporary problems, even, or perhaps especially, in very troubled parts of the world, I know of no better philosophy.

To advance towards my own sympathetic but critical reconstrual of Popper's philosophy, chief among the materials that I have used are his *The Logic of Scientific discovery* (1959) and his two political philosophical books *The Open Society and Its Enemies* (1945) and *The Poverty of Historicism* (1957). *The Open Society and Its Enemies* went through five editions: the last edition was published in 1966. There are two editions of *The Poverty of Historicism*, the last of which was published in 1961. I have referenced both works with their original years of publication, *The Open Society and Its Enemies* 1945 and *The Poverty of Historicism* 1957, because Popper's revisions did not alter in any significant way the original ideas from their first appearance.

*Karl Popper: After the Open Society: Selected social and political writings* (2008b), edited by Jeremy Shearmur and Piers Norris Turner, assembles some of Popper's unpublished drafts and personal letters so as to present what may be referred to as the "later Popper" in social and political philosophy. Some scholars, such as Katrina Forrester, who reviewed that book, suggest that in it Popper is to be viewed as changing from liberal to neo-liberal in his outlook, from the liberal who advocated piecemeal social reform to a neo-liberal advocating limited government intervention both in free market relations and in the freedom of individuals to think independently and to act in any non-criminal way. In other words, Forrester reads the later Popper as situated in the camp of the new right. If this were the case, then it would appear that the piecemeal social engineering Popper described in *The Poverty of Historicism* and favoured in *The Open Society and Its Enemies* has suffered abandonment. Piecemeal social engineering seems incompatible with a system such as neo-liberalism that is associated with "extreme risk

and massive reward, but also social inequality and potential market failure” (Forrester 2012: 42). Forrester derives support for her position from a letter that Popper wrote in 1956 in response to Henry Hazlitt, the American journalist who was a defender of classical liberal economic ideas and a founding member of the Mont Pèlerin Society (Shearmur and Turner 2008b:196). Popper defended himself against Hazlitt’s criticism of Marxism in *The Open Society and Its Enemies*. Hazlitt thought Popper had over-emphasised in the same way that Marx had done the signs of the increasing misery that results from *laissez faire* capitalism. In the course of defending himself against Hazlitt, Popper retracted some of the ideas he had expressed in *The Open Society and Its Enemies*, and admitted that he sounded uncritical, for instance, in his demand for state interventionism in preventing unemployment and in his concerns for taxation. In his subsequent views, Popper asserted that “all state intervention contains grave dangers” (Shearmur and Turner 2008b:198). Accordingly, the open society now seemed to Popper to be too Keynesian in nature, while, at the same time, he no longer wished to be associated with the idea of social equality. Although Popper still advocated the idea of negative utilitarianism (which is the principle of ameliorating suffering and fighting the greatest and most urgent evils of society, and includes but is not limited to ameliorating “starvation, pain, humiliation, injustice, exploitation”) (Shearmur and Turner 2008b:119), he had stopped pursuing the goal of increasing equality. Popper’s revised view was that freedom is more important than equality, and that the aspiration of an egalitarian society is no more than a beautiful dream (Popper 1974: 36).

Shearmur himself published a rejoinder to Forrester in the *London Review of Books*. Shearmur’s letter (2012) states:

*Katrina Forrester reads Popper as if he was a proponent of market liberalism, or ‘neoliberalism’ (LRB, 26 April). But this isn’t the case. Popper certainly valued liberty and markets; but within the broad commitments of the ‘open society’ he was willing to accept considerably more government involvement than neoliberals – or any conservative, for that matter – would. Any account of Popper’s views is complicated by the fact that he found admirers on the left as well as on the right. But today there is no reason to think that support for liberty and (well-regulated) markets alone entails any particular position on the liberal spectrum. Part of the interest of After ‘The Open Society’, the collection of Popper’s writings that Forrester reviews, which I co-edited, is that it shows the extent to which Popper never fully joined with Hayek and other neoliberals. For example, late in his career he proposed that the state take a 51 per cent share in all public companies (but not an active role in management). His attention to the problem of overpopulation and his (curmudgeonly) worry about the effects of mass market television, also tell*

*against a neoliberal interpretation of his views, especially when a more consistent social democratic interpretation is available. Popper was explicitly critical of 'free market ideology'. But the main contribution of his political philosophy was towards the defence of the widely shared liberal commitments of the 'open society', within which more specific policy prescriptions may be worked out through trial and error.*

To assess Shearmur and Turner's account of the "later" views of Popper in the *After the Open Society*, I seek in this dissertation to evaluate how Popper's "later" views continue to reflect the exciting and original ideas that Popper expressed in *The Open Society and Its Enemies* and *The Poverty of Historicism*. Though there are certain views that the later Popper expressed that appear to move him to the position of a neo-liberal, this appearance is deceptive; one can come to a good appreciation of the richness and the worth of his position by examining the liberal outlook as contained in *The Open Society and Its Enemies* in light of the wider doctrines of Popper's own sophisticated critical rationalism. The focal concern of this thesis is to demonstrate this. In order to challenge and critically redress the large-scale utopian planning and central economic planning which affect many democratic as well as non-democratic states, it is important to use Popper's original ideas in political philosophy. If both liberal and non-liberal politics are beset by excessive planning, then both are in conflict with Popper's politics of liberalism. To shape worthy criticism of either, the ideas serve perfectly well that Popper expressed in all the five editions of *The Open Society and its Enemies* and in the two editions of *The Poverty of Historicism*.

## **Acknowledgements**

My first gratitude is to Dr. Philip Catton who was the senior supervisor for the first year of my study, and also became my main supervisor during the period of the revision and rewrite of the dissertation called for by my external examiners. Philip came out of retirement to take up the supervision of my dissertation revision and rewrite. His supports during the main period of the 2011 Christchurch earthquakes are immeasurable. His encouragements and critical feedback helped lay a strong foundation for this dissertation. I am also eternally grateful for his unflinching support and genuine understanding of the condition under which I had to do the rewrite. I thank him very much.

I am also thankful to Prof. Mark Francis, who took over the supervision of my dissertation at the early stage of the restructuring that took place at the University of Canterbury due to the effects of seismic activities of 2011 in Christchurch. After Philip retired, I was no longer sure if I wanted to continue this PhD programme at the University of Canterbury due to those earthquake occurrences. I took courage and stayed. I am highly indebted to Mark for his supports, guidance and valuable feedback leading to the successful writing of the first stage of this dissertation.

Prof. Robert Nola became my associate supervisor in 2012. His critical feedback on Popper's philosophy helped to shape my ideas a great deal in writing this dissertation. I am highly indebted to him.

I am grateful to all members of the Department of Philosophy and Political Science for their supports and encouragements. Special thanks go to Drs. Douglas Campbell, Carolyn Mason, Jane Cooper, and most especially, John Eggleston for his supports, friendship and for his push and encouragements whenever I lost the zeal to continue writing.

Many thanks to the different Nigerian communities in the entire South Island of New Zealand, especially members of the Nigerian Canterbury Association of New Zealand Inc. I am grateful for all your supports.

I am grateful to the management and governing council of Lagos State University, Ojo, Lagos, Nigeria, for granting me three years training leave with pay to enable me study towards a PhD degree at the University of Canterbury, New Zealand.

My most indebtedness goes to my wife, Rosemary Taiwo-Afisi for her steadfast loyalty while I was away from home for those years to study abroad. All by herself, she raised our three kids; Timi, Tomi and Teni. To my kids, I am sorry I was not physically there for you for these years past. I needed to do this for us. I promise to make it up to you.

## Chapter One: Discovering Karl Popper: A Biographical Context

*If ... harsh words are spoken about some of the greatest among the intellectual leaders of mankind, my motive is not ... the wish to belittle them. It springs rather from my conviction that, if our civilisation is to survive, we must break with the habit of deference to great men. Great men may make great mistakes; ... some of the greatest leaders of the past supported the perennial attack on freedom and reason. Their influence, too rarely challenged, continues to mislead those on whose defence civilisation depends, and to divide them. The responsibility of this tragic and possibly fatal division becomes ours if we hesitate to be outspoken in our criticism of what admittedly is a part of our intellectual heritage. By reluctance to criticise some of it, we may help to destroy it all.*

*(Popper 1945a: Preface to the First Edition)*

*We must plan for freedom, and not only for security, if for no other reason than that only freedom can make security secure.*

*(Popper 1945b:182)*

### Introduction

Karl Popper (1902-1994) officially esteemed both open criticism of any idea and boldness of theoretical thought. As a thinker Popper was himself audacious enough to denounce the highly revered Republic of Plato (c.428-c. 348 BCE), to attack the ostensibly “scientific” interpretation of history of Karl Marx (1818-1883), terming it unscientific, to question the scientific status of the theory of psychoanalysis of Sigmund Freud (1856-1939) and of the “individual psychology” of Alfred Adler (1870-1937), to upset the verification principle of the Vienna Circle and then to stand intellectually opposed to logical empiricism. Popper himself boldly advanced new ways to think about the nature of science, about cosmology and whether the world is deterministic, about what probability is, about the meaning of quantum mechanics, and about the qualities of freedom and security in an intellectually open society. It is well known that criticism is the touchstone concept of Popper’s philosophy. Every element of human thinking should be open to potential criticism, Popper believed. Likewise Popper believed that every element of human practice should be open to potential criticism. Yet, however roundly Popper valued the ability to despatch a formerly received way of thinking or to invent a bold new form of theoretical thought, he at the same time professed the need to be cautious in action. Ambitions that are utopian or revolutionary seemed to Popper always unacceptable. We must always be open to reforming our practices, but we must attempt this slowly and piecemeal. Every change that we make we must hold open to criticism. It should always remain possible for us to judge that some past reform of ours was a misstep.

The balance between boldness and caution in Popper is complex. Caricatures of Popper's philosophy either entirely miss the balance or otherwise do not do justice to it. The balance must be grasped however in order to fairly assess what Popper's philosophy is. To grasp the balance is essential if we are to register how Popper's prescription for boldness actually esteems a kind of courage.

The concept of courage is more demanding than that of boldness because courage links to settled conviction, to deeply held values. A fearful or insecure person is not apt to act in ways that reflect settled conviction or deeply held values. Insecurity will trap a person into inaction or into obsequious following. Fear is the emotion that prepares persons quickly to alter not merely how they act (if they do) but even the very principles upon which they would normally base what they do and are willing to do. By contrast, courageous persons, in some context in which courage is called for, while they may quickly alter what they do, will not alter the principles upon which they base what they are willing to do (Catton 2010: 5). They act courageously by acting in the minute in the face of evident adversity also at the same time from deeply held values. Courage is not possible except that reflects very significant conservation of values. By contrast the concept of boldness connects with striking out in an unexpected direction. A bold person simply oversteps some previously settled way of acting (Catton 2010: 6).

To the issue of how boldness can come together as courage, Popper seems to hold an answer. However, to judge so, one has to get beyond the basic rhetoric of conjecture and refutation. One has to focus on the communitarian dispositions, the anti-revolutionary attitudes, the demand that while any one element of current culture may be criticised and rejected it is important to do this work piecemeal and carefully. Only then does the audacity or boldness of rejecting a seemingly settled view amount to courage: for it reflects also significant conservation of values. Popper held that people must be able to be critical, and (piecemeal) to be bold in how they experiment and replace some formerly received norm or idea. Popper's point about protecting freedom is that unless you do, you actually do not secure security. For in a society that lacks that openness or critical rationality, hijack is possible that effects revolution and so is utterly destructive of security.

Popper's contribution to the philosophy of science, particularly to scientific methodology, is very remarkable. Bryan Magee (1930- ) cited the mathematician and theoretical astronomer,

Sir Hermann Bondi (1919-2005) saying that “there is no more to science than its method, and there is no more to its method than Popper has said” (Magee 1973: 2). Yet when people know only in caricature what Popper’s philosophy of science is, claims like these seem incredible. To make the high praise of Popper by Magee or Bondi credible, you need to study the complex balance of ideas in Popper’s philosophy.

The purpose of this chapter is to consider biographically and in terms of his intellectual context how Popper came to have his balanced perspective. I acknowledge that there already exist many published materials on the biography of Popper. Popper himself did an excellent survey of his life in *Unended Quest: An Intellectual Autobiography* (Popper 1974). The historian, Malachi Haim Hacoen (1957- ) provided a very comprehensive account of the life and times of Popper in his *Karl Popper-The Formative Years 1902-1945* (Hacoen 2000). In addition, Jeremy Shearmur (1948- ), in his *The Political Thought of Karl Popper* (Shearmur 1996), gave a historical sketch of Popper while discussing the development of Popper’s political philosophy. Additionally, there is a series of expository and encyclopaedic materials on the life, times and works of Popper. Despite all this the present chapter aims to do something new. Based on discussions that I had with Shearmur when I was for some weeks at the Australian National University, I believe I may offer here some ways to correct some mistaken accounts of Popper’s biography. In particular I will elaborate on the features of an enduring liberal-communitarianism in Popper that many commentators upon Popper do not see. The two important features are the ideas of freedom (including both individual and social aspects), and piecemeal social engineering. These are in my view no less essential to Popper’s philosophy of science than they are to Popper’s political philosophy. Events of Popper’s life together informed the development of his philosophy of science and his political philosophy. An essential balance in both can best be grasped by newly considering Popper’s biography and its context.

### **Popper, philosopher of science**

Particularly after he moved from the Canterbury University College, Christchurch, New Zealand, to the London School of Economics in 1946 as the first Professor of Philosophy of Science and Logic, Popper’s primary claim to fame has concerned the philosophy of science. His lectures influenced Imre Lakatos (1922-1974), Paul Feyerabend (1924-1994), and John Watkins (1924-1999) who number amongst the most prominent philosophers of science in the

twentieth century. His lectures and books continue to have prolific and significant influences on many contemporary philosophers. It is significant to admit that Popper perhaps continues to be the most widely recognized philosopher of science by actual scientists. The acknowledgements by two pre-eminent scientists, J.C. Eccles (1903-1997) and P.B. Medawar (1915-1987) (each a winner, respectively in 1963 and in 1960, of a Nobel Prize) on the influence that Popper had on their work helps ensure Popper's standing as the twentieth century philosopher of science most influential upon science.

To study the origins of Popper's philosophy of science is partly to consider the key personal commitments and life experiences which influenced the development of Popper's philosophy of critical rationalism. Yet, another aspect that is personal to Popper concerns how those intellectual experiences helped to shape the moral core of his thinking and helped him to balance two critical aspects of his philosophy: the individual and social aspects. Typically discussions of Popper's critical rationalism consider chiefly the individual aspects. However, this thesis delves the more into Popper's enduring communitarianism. With respect not only to Popper's political philosophy but equally his philosophy of science, it is important to emphasise that a kind of balanced philosophy, a liberal-communitarian political philosophy that is constituted by both individual and social aspects, can be properly called Popperian. Popper's life experiences, such as his encounters with Marxian socialism and the theories of psychology of his fellow Viennese Freud and Adler, as well as the intellectual influences on him, such as that of Immanuel Kant (1724-1804), Ludwig Wittgenstein (1889-1951) and the members of the Vienna Circle, shaped both the individual and social aspects of his critical rationalism.

Popper's first published book *Logik der Forschung* (1934) which was later translated into English as *The Logic of Scientific Discovery* (1959) can be regarded as laying a foundation for a deductive method in science (by hypothesis and test) while *The Open Society and its Enemies* (1945) and *The Poverty of Historicism* (1957) are viewed as relevant only in the political realm. Yet it is the ideas in these various books in combination that make up Popper's critical rationalism. According to the philosophy of critical rationalism, it is not only in politics but also in science that the individual and social elements are intertwined.

Popper did centrally consider the individual, both in science and in the political sphere. In both science and politics the freedom that he lauded (and demanded that we protect) is that of the

individual. An element of the background for this is that Popper lived his formative years during what still seemed a heroic age in science. At the early stage of his intellectual life, it still seemed that significant discoveries in science proceeded out of the crucible of individual minds. This is why Popper is sometimes perceived as shaping his understanding of science accordingly, as though the scientific method is one that is wielded by the individual researcher, and science ends up being just what a good scientist does, times the number of scientists that there are. Such a caricature of Popper on scientific method possesses a grain of truth, but on the other hand Popper did recognise both earlier and more deeply than any of his contemporaries in philosophy of science the need to acknowledge social or communitarian aspects of the scientific process.

In the next subsection, I consider the issue of Popper within what still seemed a heroic age of science. What was science getting to look like when Popper worked, and what were the effects of this circumstance upon his thinking? My discussion of the heroic age of science will lead me to consider, via Popper's contemporary Albert Einstein (1879-1955), also Isaac Newton (1642-1727) and the philosophy of Newtonian science that was developed by Kant, a philosophy that several intellectual developments in the late nineteenth and early twentieth centuries had served to challenge. The context not only for Popper's work but very much also for contemporary logical positivist philosophers was to discover the way to step beyond Kant as philosopher of science. I will discuss why Popper disagreed with the logical positivists. The philosopher Wittgenstein also reflected this circumstance and I will consider his thinking also and why Popper disagreed with it.

### **On the Heroic Age of Science**

The question to what extent science really is a heroic activity could be phrased as follows. Is science just what a scientist does, times the number of scientists that there are? (Or rather, since some individuals do clearly stand out as superior in their effect, the question should rather be phrased: is science just the sum of what individual scientists do?) Eponymy is a prize in science, partly because it suggests that what science is really, is just what the scientist does who discovers some eponymous law or effect or anomaly or reaction etc. Sometimes you get pairs, for example "Belousov-Zhabotinsky reaction" or "Aharonov-Bohm effect", but one scarcely gets more than pairs and most often one gets single solitary names. So, that creates the impression that science is what these individual scientists do. Then the impression is that

science is what a scientist does times the number of scientists that there are, except that some are more significant as scientists than others, so that it's better to say more blandly that science is the sum of what individual scientists do. It is important but not at all obvious that this impression is false.

Popper was born very much into times when this additive, individualistic view of science was the prevailing conception. (Notice that the nineteenth-century word 'scientist' reinforces this conception: the word suggests that scientists are to science somewhat as building blocks are to a building, you just add them up, or add their effects up, and you get science.) However, these heroic times for science were not going to last. There began to emerge a new stage of science which called for "total-system models adequately reflecting the intricate interconnectedness of multilevel, multi-goal organisations in which positive and negative feedback processes give rise to alternative decision modes"(Marney and Schmidt 1976:191) The change may partly be that the heroic image of science was reconsidered. Among others who reconsidered this image were historians and philosophers as well as sociologists of science. Eventually all those interpreters of science got to think that science has in fact always been a profoundly social activity. However, a further fact is that by the present day the social organisation of science has significantly changed. Compared to when Einstein possessed his celebrity status, the social organisation of science has changed in ways that remove individuals from the limelight. There is not so much eponymous science projected, now. Publications in science generally have a great many authors. The times are past when scientific problems could be addressed by bench-top laboratory work by an individual or by a small number of individual researchers. A lot of scientific activity is now very sizeable, in the sense of bringing together very large teams. Problems in science typically crumble under a many-sided kind of pressure that is exerted by a diverse and very large team of people. No-one expects that another Einstein is around the corner: even if science were to change or advance profoundly, people expect that that would not be traceable to the intellect of any one individual.

According to the kind of view of the history of science that certainly was still official in Popper's day, science proceeded into fully fledged existence already in a heroic condition. While it was not until the nineteenth century that the term 'scientist' had even been invented, and also not until the nineteenth century that people mostly used the term 'science' to designate the intellectual activity that had descended from natural philosophy, it is nevertheless common, with hindsight, by backwards projection of the word 'science', to trace the onset of up-and-

running science to the seventeenth century, perhaps to Newton, perhaps to Galileo Galilei (1564-1642) or to some other figure or small set of figures such as Nicolas Copernicus (1473-1543) or René Descartes (1596-1650). The usual pattern is to consider the first defining contributions eponymously -- ‘Copernicanism’, ‘Galileo’s law of falling bodies’, ‘Descartes’ analysis of the rainbow’, ‘Newton’s crucial experiment showing the composite nature of white light’. So, according to the usual view of the history of science, when science first got to be up-and-running it was already in a heroic condition. For example, saying that Newton marks when science began to be an up-and-running concern is to imply that science at its get-go was significantly being created by the heroic individual researcher.

There are reasons to question this official historiography, and to argue to the contrary that just as the emergence of science was gradual and inestimably social, so also its gathering operation remained dependent more upon interrelationship between individuals than upon the spectacular genius of certain great individuals working in some kind of significant solitude. The idea that science is a heroic activity nevertheless strongly maintained itself through to Popper’s time. That idea was amplified by how scientific achievement was made out eponymously -- “Boyle’s law”, “Cavendish’s experiment”, and “Darwinian theory”.

It is possible to argue either way on the question how affected Popper was by the official understanding of science as a heroic activity. He did seem to present as his understanding of science a description of a method that could potentially be wielded by an individual researcher. Popper no doubt capitalised upon the idea that by wielding this method the individual scientist becomes a paragon of critical rationality professionally. It is no wonder that Popper is so beloved by scientists, given how far he flattered them in the image he created concerning their special worth (as individuals). On the other hand, Popper emphasises rather more than any other philosopher of science of the first half of the twentieth century the dependency of science upon community.

Moreover, unlike many early positivists, Popper understood fully and completely that science is fallible. An expectation that prevailed for a long while after Newton is that truly scientific accomplishments would all be enduring. The idea was that past scientific accomplishments could be further accreted to, but they could not be corrected. The idea was that because past scientific accomplishments were scientifically established and lawful they were necessary and therefore forevermore certain. For example, in the way that Kant endeavoured to explain how

Newtonian physics is possible as knowledge, Kant urged that Newtonian physics is final so that although it can be further accreted to it cannot be either refuted or superseded.

Popper may derive inspiration from Kant in important ways, but he of course completely dismissed Kant's expectation that Newtonian science is certainly true or necessarily true. For, Popper lived in times that were newly aware of ways in which Newtonian science was false. The remarkable thing about eponymous science in Popper's day was that it almost, in every element, overturned significant earlier reaches of science. Whether we consider the theory of blackbody radiation of Max Planck (1858-1947), the theory of the atom of Niels Bohr (1885-1962), or Einstein's theories of special and then general relativity, all of them eponymous contributions, they all represent correction of science that had gone before not accretion to former science.

Einstein and L. Infeld (1898-1968) together wrote a popular book called *The Evolution of Physics* (1938). This book details the way in which the latter half of the nineteenth century was a watershed: the old expectation about steady accretion to science met at that time its undoing. The new theory of fields just would not satisfactorily resolve itself as an extension of the old theories of mechanics. Attempts to bring about unity between Newtonian mechanics and field theory were ill fated. Mechanical conceptions of electromagnetic fields were attempted, but they could not be made to work. (It is the velocity-dependence of the electric or magnetic forces that interferes with making a mechanical ether theory of electromagnetism work.) As a result, from shortly before Einstein, the attempts to reduce electromagnetics to mechanism were flipped on their head. For a while, electromagnetic explanations were attempted of mechanical phenomena. Yet this programme (called the "electromagnetic world picture") also could not be made to work. To unify physics you needed to shift its concepts, and not simply use the concepts that were already about. The change needed to be no mere 'change within a framework' but rather more considerably to some degree a 'change of framework'. By the time of the writing of the Einstein and Infeld book, significant unifying accomplishments of this new kind had been made (by Einstein chiefly) and that had led to new successes in the theoretical comprehension of phenomena. Yet the effort was by no means complete and the emergence of the quantum theory struck Einstein as a new kind of impasse, an impasse that he hoped in vain he could get beyond, by some new shift in concepts.

Popper was struck by the readiness of leading scientists such as Einstein to 'go back to the drawing boards' and quest for better concepts or thus for a better theory. He took their example to indicate sharply the fallibility of science. Individual scientists such as Einstein were capable of originating veritable breakthroughs in a science. Popper derived enormous inspiration from Einstein as a scientist. Popper's postulation of falsifiability as a criterion of science itself looks to what he believes that it is possible for an individual scientist to do. However, Popper regarded no such scientific breakthrough as revolutionary. Even the process of conjecture and refutation, of trial and error, is a piecemeal method, in Popper's understanding of it. That is a point of connection between Popper's critical rationalist conception of science on the one hand and his critical rationalist conception of worthy political reform on the other hand. The heroic scientist does not dismantle the whole ship (to refer to a metaphor credited to Popper's contemporary, the positivist Otto Neurath, 1882-1945) except perhaps one plank at a time replacing each plank as the effort goes on. Every step is as conservative as it is also bold, and that alone helps make it courageous.

Popper's outlook on science is no doubt significantly individualistic, but there is also a communitarian balance. He emphasised the fallibility of every conjecture and the need for inter-subjective criticism and severe testing of every idea that is advanced. One aspect of Popper's communitarianism is his insistence that scientific conjectures are all brought to the public domain where peer-review is allowed and is essential.

Having lived near the end of what was a heroic age in science the significant effect of this on Popper's understanding of the relationship between individual and community can be found in his reaction to the current dominant strand of thought of his time, namely logical empiricism. Contra logical empiricism Popper developed a different variant of the concept of the unity of method. The logical empiricists had argued that science follows one and the same universal method across all its sub-disciplines and alone is meaningful. Any other kind of inquiry is meaningless, the logical empiricists insisted. However, Popper held that even though falsification is a single specifiable method which can be taken as a criterial for the standing as a science of all the sciences it does not preclude other modes of inquiry. Popper even held that there can be non-scientific, metaphysical inquiry, that later emerges as a mode of scientific inquiry. We are not to condemn the metaphysical phase, for that might have been a necessary step to get a new science going (Popper 1959: 19, 38, 252., Bartley 1968: 47-54., Popper 1968:

93-98., Bartley 1968: 115, 118)<sup>1</sup>. This is an argument for plurality of methods; and it is social in character.

Kant had in Popper's view usefully attempted to steer a path between scepticism and dogmatism. That is the sort of thing that Popper wished to do. Kant had urged that the certainty and necessity of Newtonian science relates not to the way that the world is independently of us, but rather to us. Kant attempted to find a middle path between scepticism and dogmatism partly by distinguishing 'phenomena' from 'noumena' and limiting possible human knowledge to the former. If we orient ourselves to do science, Kant believed, that is, if we try to set out the laws of phenomena, then when we have succeeded at this we are bound to have come to think that the world follows the laws of motion and the law of gravitation. Newton did only what anyone would have to do, in order to succeed in creating science. Yet by Popper's day Einstein and others had clearly shown this to be false. So Kant's path between scepticism and dogmatism seemed to Popper much in need of revision. Popper was both more realist than Kant, dismissing the Kantian distinction between 'phenomena' and 'noumena' as a mistake, and also was more thoroughly fallibilist than Kant. Yet Popper at the same time tried to find a middle path between scepticism and dogmatism.

From this perspective, the development of Popper's philosophy of science can be said to have come as a reaction to some of the doctrines of science upheld at that time. Although his views radically challenge many strands of thought in his time, his philosophy is still an offshoot of some of them.

I will argue next that Popper learned significant lessons from Kant concerning the need to consider science to be communitarian. Popper does not let go of individualism entirely, but he nevertheless balances this with equal emphasis on the community. Thus the image that science had begun within and still remained within a heroic age, while it was undoubtedly part of

---

<sup>1</sup> Popper had in several of his writings stated that his philosophy of science was not averse to metaphysics. W. W. Bartley III has written that Imre Lakatos's "Methodology of Scientific Research Programmes" merely takes Popper's own methodology of metaphysical research programmes and changes the name 'metaphysical' to 'scientific'. Bartley's citations of Popper in that essay defends the claim on Popper as a methodological pluralist. See William W. Bartley, III, «Theories of Demarcation between Science and Metaphysics», in: Imre Lakatos and Alan Musgrave (editors), *Problems in the Philosophy of Science* (Amsterdam: North-Holland, 1968), pp. 40-64; Popper's reply: Karl Popper, «Remarks on the Problems of Demarcation and of Rationality», *ibid.*, pp. 88-102; and Bartley's reply to Popper: *ibid.*, pp. 113-119.

Popper's intellectual context and influenced his philosophy, by no means completely took over Popper's thinking.

### **Some influences of Kant**

Popper had high admiration for Kant. Popper in fact referred to himself as “an unorthodox Kantian” (Popper 1974: 82). A Kantian is one who accedes to the principles underlying Kant's philosophy without significant revision. “Unorthodox” is of course a caveat on “without significant revision”. His philosophical interest in Kant led Popper to devote an entire chapter to Kant in *Conjectures and Refutations: The Growth of Knowledge* (1963: 33-59). This strong influence of Kant on Popper is discernible both in Popper's idea of individual freedom and his socio-communitarian elements.

Let us be clear that Kant models balance between individualism and communitarianism. In his *Grounding for the Metaphysics of Morals* (1785), Kant viewed the human individual as a rationally self-conscious being with “impure” freedom of choice. He considered that for an individual will to be regarded as “free”, it must be understood as capable of effecting causal power without being caused to do so. Kant himself averred, however, that the idea of a lawless free will, that is, a will acting without any causal structure, is unintelligible, and consequently unacceptable. Therefore, a free will must be a will that acts under laws that it gives to itself (Kant 1785, trans. Ellington 1993: 6). Popper found this Kantian idea of ethical individualism to be convincing; and it was a doctrine that Popper developed into his idea of individual freedom. So, in one aspect of his political philosophy Popper favoured individual freedom. His liberal political philosophy upheld the ultimate freedom, well-being and rights of the individual. This individualism that he derived from Kantian ethics permeates all aspects of his philosophy — from science to politics. As Anthony O'Hear acknowledges (O'Hear 1995:283), Kantian ethical individualism was a presupposition of Popper's *The Logic of Scientific Discovery*.

Yet Popper's ethical individualism is balanced by Kant's prioritisation of inter-subjectivity to subjectivity. Just as there is a socio-communitarian aspect of Popper's philosophy, there is good reason to see this as coming from Kant. Kant's categorical imperative denotes a moral unconditional requirement that all individuals must follow in all circumstances; it is justified as an end in itself. Kant (1785 trans. Ellington 1993: 30-43) offers three basic formulations of this categorical imperative:

1. Act only according to that maxim whereby you can at the same time will that it should become a universal law without contradiction.
2. Act in such a way that you treat humanity, whether in your own person or in the person of any other, never merely as a means to an end, but always at the same time as an end.
3. [A]ct as if [you] were through [your] maxim always a legislating member in the universal kingdom of ends.

Kant held these three formulations to be fully equivalent to one another. In which case, the three formulations of the categorical imperative are, in Kant's view, one principle, namely the supreme principle of morality.

Although the first and the second formulations do not seem broadly concerned with the idea of community of agents, the third formulation roundly delivers a socio-communitarian aspect of Kantian philosophy. The first formulation of the categorical imperative demands that the form of an individual's action is one that could be universalised. This formulation at first blush seems merely formal and in that way devoid of any communitarian import. However, that would be a wrong interpretation, if the first formulation really is equivalent to the other two. The second formulation narrowly exhibits a communitarian tendency, as it is concerned with the idea of the self whose action is considered in relation to some specific other person. The third formulation is roundly communitarian. Its moral proposition entails that every individual action must be considered in such a way as it concerns the entire community of agents and what it would be for that community to harmonise.

To consider the Kantian backdrop this way helps to make social element in Popper's philosophy comprehensible. The argument can be made that, from Kant's categorical imperative, Popper developed a social element for his liberal politics and in that way curtailed his individualism. It can then be averred that the central element of Popper's critical rationalism entails both individual and social aspects. The individual aspect upholds the sanctity of human freedom. However, such a commitment to human freedom does not in any way entail a disregard to community values of social relation. More importantly, the essentials of both individual and social aspects of Popper's philosophy are grounded in his epistemological and ethical arguments of the relational embeddedness of the 'self' with others. Elaborate discussion on this shall be made in subsequent chapters.

What is noteworthy in both elements of Popper's idea of freedom is the fact that he was concerned about securing the community from possible hijack. He averred that we need to strengthen our democratic institutions. Although he advocated for modest (piecemeal) state interventionism, he warned against increasing the power of the state without being watchful. No change through which we would lose our freedom could truly advance us towards being more secure. State intervention should be limited to what is compatible with the protection of freedom. The consideration that people must be ever vigilant against possible suppression of human freedom is a plea for the piecemeal approach to social engineering. It is the basis for Popper's opposition to utopian or holistic methods of social engineering. Only piecemeal measures are tractable and compatible with protection of human freedom. Utopian or holistic methods of social engineering would suppress freedom and ultimately render every human insecure (Popper 1945b: 122).

The above assertion reveals that Popper balanced against his capability of audacity an anti-revolutionary tendency. He portrayed a positive regard for security: his philosophy is liberal-communitarian in how the two poles work together; his individual freedom with a necessity to make security secure, and the need to secure in society (the community) with the possibility for individual freedom. I have briefly argued in this subsection that these views of Popper's follow the inspiration of Kant.

### **Interaction with Wittgenstein**

A second intellectual influence upon Popper which to Popper seems instructive mostly by negative example is that of Wittgenstein's philosophical consideration of language. Wittgenstein is notorious for having significantly changed his views, which establishes that we need to distinguish "the early Wittgenstein" from "the later Wittgenstein". However, Wittgenstein very much concentrates upon the nature of language in both periods. Wittgenstein wants to know the nature of language, how language represents the world and the implications of its nature for logic and mathematics.

In the *Tractatus* (published in German in 1921), the early Wittgenstein treated philosophy simply as an activity for clarification of thoughts through the analysis of language. The ideas are centred on a distinction between genuine (atomic) propositions that are meaningful and metaphysical propositions that are meaningless. Meaningful atomic propositions describe basic facts that can only be verified by experience. They describe 'possible state of affairs' or the

general state of things that can be verified in the world. However, propositions that do not correspond to an actual state of affairs or rather those that cannot be verified by experience remain pseudo-propositions; as such, they are meaningless or nonsensical (Wittgenstein 1921: 18).

The later Wittgenstein developed a case that no language is possible except that is public and shared. In the *Philosophical Investigations*, Wittgenstein developed his “private-language argument” — namely, an argument that no truly private language is possible. Wittgenstein continued his examination of what it is for an utterance to be meaningful. In Wittgenstein’s view, meaning of language must look beyond the individual sensational understanding of the speaker. Language is meaningful in principle only when it is subject to public standards. Wittgenstein’s argument is against the possibility of a language in which “words ... are to refer to what only the speaker can know — to his immediate private sensations ...” (Wittgenstein 1953: 243). Such a private language would, Wittgenstein argued, be neither genuinely a language nor in any true way meaningful. There could not be such a language. The truth function of language is essential to what language is. An utterance truly is linguistic only if it bears that kind of relationship to understanding that establishes the possibility of judging the correctness of its use, “so the use of a word stands in need of a justification which everybody understands” (Wittgenstein 1953: 261).

It can be clearly interpreted that Wittgenstein’s rejection of a private language may imply that language is something which must be shared by both the speaker and the listener. A genuine and meaningful language entails an objective/subjective distinction with respect to what is communicated and how it is received. The objective/subjective distinction embraces the fact that there is no language outside the context of the other speakers of the same language (Pinto 1999:80). For this reason, one can view Wittgenstein’s reproach of the very idea of a private language as an argument which embraces a social dimension to the meaning of language.

In the *Philosophical Investigations*, Wittgenstein is of the view that agreement in judgement is a condition of possibility of linguistic norms. This seems to suggest a social account of language. This perceived social character of language in Wittgenstein denotes that the linguistic meaning of words by agreement by all members of a community would provide the basis upon which words make meaning within the community. In other words, meaningful language is

identified with how it is understood and accepted by public standards. Language is identified with how words can connote the same meaning to all members of the linguistic community.

With Wittgenstein's interpretative idea of the social character of language one is disposed to think that Popper also derived from Wittgenstein, much as he did from Kant, the communitarian element of his philosophy. Contrary to such expectation, Popper was very critical of Wittgenstein. Popper was contemptuous of Wittgenstein's fascination for language and only language.

First, Popper was critical of the notion that had emanated partly from Wittgenstein that verifiability as a criterion demarcates meaningful statements from meaningless ones. Such a view reduces all statements to ones which recount mere observation. Popper's contention was that Wittgenstein's verifiability criterion of demarcation was an inadequate description of scientific statements. To Popper, scientific statements cannot be reduced to some truth-function of propositions that somehow derives them from observation (Popper 1963: 39).

Second, Popper considered that the issues and problems of philosophy should be viewed as broader than Wittgenstein had supposed. There is no way to reduce philosophy to mere philosophy of language. Popper even deprecated philosophy of language as narrow and mostly irrelevant<sup>2</sup>. Popper's criticism of Wittgenstein appeared in the preface to the first English edition, (1959) of his *The Logic of Scientific Discovery*. Popper's position was that it is a mistake to assume that there are no genuine philosophical problems, or rather to assume that if there are any, they are just problems of linguistic usage (Popper 1959:15). Popper's response to this became widely known as 'Wittgenstein's poker'<sup>3</sup> when both philosophers met on 25<sup>th</sup> October, 1946 at a meeting of the Moral Sciences Club in Cambridge where Popper was invited to present a paper entitled "Are There Philosophical Problems" (Edmonds and Eidinow 2001: 340). In the paper, Popper emphasised that there is more to philosophy than mere analysis of the meaning of words. One problem, according to Popper, concerned a traditional domain of

---

2 See Popper on "Language and Mind-Body Problem: A Restatement of Interactionism". This is where Popper rejected the claim that the source of philosophical difficulties is to be found in the misuse of language.

3 While a vehement argument ensued between Popper and Wittgenstein over whether there exist real philosophical problems (Popper), or they are merely linguistic puzzles (Wittgenstein), Wittgenstein was said to have used a fireplace poker to emphasize the point he was making. So when Wittgenstein challenged Popper to give an example of a moral rule, Popper's answer was "not to threaten visiting speakers with pokers". Wittgenstein, in his characteristic fashion, was noted to have dropped the hot poker immediately and stormed out of the hall. See Edmonds, David, and John Eidinow. *Wittgenstein's Poker: The Story of a Ten-Minute Argument between Two Great Philosophers*. London: Harper Collins, 2001.

philosophy in which many thinkers in Popper's day remained interested. This was the problem of cosmology (Popper 1963: 40).

It can be inferred from the above that the fascination and admiration that Popper had for Kant was not extended to Wittgenstein. One way to consider this difference would be in terms of which philosopher, Kant or Wittgenstein, is deeper. Kant did not limit philosophy to language because he considered conditions that there are even on that experience through which people could learn a language in the first place. Kant did not limit knowledge to experience, because Kant considered conditions on experience also to be knowable. The discussion of Kant's that most directly 'goes deeper' than Wittgenstein's no-private-language argument is in his third Critique (*Critique of the Power of Judgment*). There, Kant argued that unless our apprehension of beauty possesses significant universality then we would not stand together in epistemic community; we could not communicate; we would not be a community of cognisers and so no one individual could in the first place count as a cogniser (Kant trans. Meredith 2007: 75). This move of Kant's completes his critical system. With the third Critique one is far better able to understand the other two Critiques and their relationship to one another. In particular, looking to the first Critique, the Critique of Pure Reason, one is able to understand the Transcendental Deduction of the Categories. (The categories are concepts that must precede human possession of a language, for they inform even that reach of experience through which language could be learned in the first place). So, instead of an argument against the possibility of a private language, Kant argued for something deeper, since he concluded that inter-subjectivity precedes subjectivity even within the experience through which language is learned. The other equivalence is Kant's view of the three formulations of the categorical imperative. This is one expression of Kant's concluding that inter-subjectivity is deeply prior to subjectivity. The prioritisation of the community to the individual that Kant emphasised in his formulation of the categorical imperative is profound. The emphasis that Kant placed on ends in his third formulation is clearly a conception of community among moral agents.

Wittgenstein's conception of the social character of language might have served as a basis for the communitarian element in Popper's philosophy. Peter Munz (1921-2006) who was a student of both Popper and Wittgenstein has analysed the Popper-Wittgenstein relationship in a way that brings to fore the inherent complementary ideas that transcend the Wittgenstein's poker debacle. Munz posited that the meaning of a proposed scientific theory (a conjecture) in Popper cannot be known until it is testable. Such a view does require that a conjecture must

possess a tentative meaning, in such a sense that Wittgenstein supplied by his discussion of a speech community. According to Munz, Popper added needed recognition that if propositions are to have such meaning, then first the socio-political order in which they are put forward has to be free and open (Munz 2004: 37-43). Munz's view is that the social elements in Wittgenstein's idea that meaningful propositions can be generated only within a social order and Popper's insistence upon the importance that the social order be free and open complement one another.

Popper's critical dealings with Wittgenstein and his contemptuousness of Wittgenstein's concentration upon language relate to Wittgenstein's attempt to reduce philosophy to mere analysis of the meaning of words. I agree with Popper that such attempted reduction is facile. (Moreover, Kant would agree with Popper that such attempted reduction is facile.) The philosophical question of cosmology (concerning how it is that the universe is comprehensible rather than being incomprehensible) or more specific questions concerning space, time, and even whether there is a God, are not merely linguistic puzzles. There are metaphysical, epistemological and ethical concerns that give meaning to these issues. Indeed what makes these questions philosophical has everything to do with how they are not merely linguistic puzzles.

Nevertheless, we may acknowledge, with Munz, that community is necessary for the very possibility of speech, and that this point (that is from Wittgenstein, but that also is more deeply developed by Kant) duly fosters the communitarian elements in Popper's philosophy. The 'self' whose freedom is so important to Popper is inevitably relationally embedded. This is a condition on there being meaningful conjecture or criticism in the first place. Not only the social aspect of Popper's political philosophy but also even the individual aspect of his philosophy of science ultimately requires a speech community. It requires that the meaning of words follows from commonalities of judgment of thus from a linguistic norm that is to be identified within the linguistic community.

### **Influence of the Vienna Circle**

The third and most significant philosophical tradition in Popper's background that I will discuss is the one that exerts the most profound influence on the development of Popper's philosophy of science. Yet from this tradition also, Popper learned mostly by its negative example. The tradition in question is that of the Vienna Circle, and goes by the name of "logical positivism"

or “logical empiricism”. The Vienna Circle progenitors were Moritz Schlick (1882-1936), Neurath, and Rudolph Carnap (1891-1970). A somewhat later exemplar of this movement was Carl Gustav Hempel (1905-1997). The verification principle as a criterion of meaningfulness importantly defines the Vienna Circle view, although Carnap later changed his orientation from ‘verification’ to ‘degree of confirmation’, and Neurath later abandoned the conception that was normally presupposed, there can be basic or merely observational sentences or statements. The logical positivist movement gained worldwide reputation and helped to professionalise the study of philosophy of science with a series of conferences in the 1930s. The greatest influences on the Vienna Circle were on the one hand *Principia Mathematica* (1910) by Bertrand Russell (1872-1970) and Alfred North Whitehead (1861-1947) and on the other hand Wittgenstein’s *Tractatus Logico-Philosophicus* (1921). The logical empiricists used their “verificationist” criterion of meaningfulness chiefly to attack metaphysics as meaningless. They claimed that statements should be regarded as literally meaningless if they could not be confirmed or verified by evidence. Although they exempted the propositions of logic and mathematics from verification, they took metaphysical, religious and moral statements to be meaningless and nonsensical because they cannot be empirically verified by experience (Hempel 1950: 43).

There are quite a number of reasons that caused the logical empiricists to arrive on the world philosophical stage when they did, just as there are quite a number of reasons why these logical positivists believed that their programme of logical reconstruction of science should be pursued. Of the various intellectual factors contributing to their emergence, the most fundamental one was that Kant’s philosophy had seemingly failed.

Over a hundred years earlier, Kant, in his *Critique of Pure Reason* (1781), had developed a conception of mathematical propositions as synthetic *a priori*. Kant extended his list of kinds of synthetic knowledge known *a priori* to include not only mathematical propositions but also other propositions that in Kant’s view help confer the lawfulness of the laws of Newtonian science. Kant’s doctrine of the synthetic *a priori* combines rationalism with empiricism. Only by combining rationalism with empiricism, Kant thought, could he explain the foundations not only of mathematics but also of physics. Kant argued that various “antinomies” of pure reason show up the limitation of knowledge to what can be experienced, while mathematics and physics show up the need to acknowledge also that knowledge is possible *a priori* of the *form* of experience. Euclidean geometry for example concerns the form of possible experience. But, Euclidean geometry can be known *a priori*. Similarly, physics depends, Kant believed, upon

the law of universal causality. That law can also be known *a priori*, as it concerns the *form* of experience, in Kant's view.

The discovery of non-Euclidean geometry by a number of mathematicians in the beginning of twentieth century rebutted Kant. To make matters still worse for Kant, Einstein's theory of relativity showed that physical space is, in fact, non-Euclidean. Through measurements, physicists revealed that the true geometry of space-time is not Euclidean but "semi-Riemannian" (Catton 2004:66). These new propositions concerning space were, of course, not *a priori* since they were discovered through a process of empirical investigation. Consequently, thinkers such as Schlick took inspiration from Einstein to run with a new, very radical empiricism. Kant's doctrine of synthetic *a priori* knowledge seemed discredited. The new theory of quantum mechanics also challenged Kant, since it challenged the very supposition of universal causality. At the same time, among philosophically oriented mathematicians and mathematically oriented philosophers, a more powerful logic had dawned, such as Kant had not known about. Russell and Whitehead seemed to have showed that using this logic one could explain mathematics as analytic, not as synthetic after all. Russell and Whitehead took themselves to have shown arithmetic truths like " $6+8=14$ ", are not synthetic *a priori* but rather are analytic *a priori* truths. Concerning geometry, Einstein himself summarised the view in his essay "Geometry and Experience" (1921). A geometry, according to Einstein, is a "logical system" (Kant would not have said this). Insofar as a geometry is certain, it does not apply to experience. Insofar as it applies to experience, it is not certain. The only way for a geometry to say something about the world is for it to have testable consequences and so to be not certain (Einstein 1921: 238)

The members of the Vienna Circle took inspiration from these considerations to define a new programme. The programme was to be resolutely empiricist, and based on the new more powerful logic. They thought then that a new philosophy of science was needed, and that this new philosophy of science would actually enhance the qualities and the practical application of scientific knowledge. They wanted to develop a philosophy of mathematics that would establish logic as the foundation not only for mathematics but also for natural science.

The empiricists had ample reasons to think (mistakenly as it turned out) that such a new programme could succeed. They also had ample reasons to want it to succeed. A rationalist philosophy during the nineteenth century seemed to have had unsavoury effects, not only in

philosophy (with extremes of seemingly idle metaphysics, such as the Absolute Idealism of some nineteenth-century rationalists) but also in the world of politics. The positivists were repulsed by political excesses such as Nazism that they blamed on mistaken, rationalist philosophy. They partly wanted empiricism to work for reasons of political reform.

Consequently they adopted the new predicate logic, following Russell and Whitehead, and they devoted this new logic, much as Russell and Whitehead had done to mathematics, to the logical reconstruction of natural science. To them, natural science was essentially connected to observation and experience in a way that logical analysis of it should reveal. Their verification criterion of meaningfulness expressed what they expected that logical reconstruction will show<sup>4</sup>. Metaphysical statements had long seemed suspect (so that Kant for example had dismissed most metaphysical statements as illusory). This criterion of verification was a new way to respond to facile metaphysics: dismiss facile metaphysics as literally meaningless. Only sentences that are grounded in potential observation and experience are meaningful. In the words of a prodigy logical empiricist, Alfred J. Ayer (1910-1989), “a sentence had literal meaning if and only if the proposition it expressed was either analytic or empirically verifiable” (Ayer 1952:5). So, since emotive, expressive, and figurative statements are neither analytic nor empirically verifiable, then they are to be categorised as meaningless.

The early Wittgenstein’s “picture theory” of meaning strongly influenced the development of the verifiability criterion. Wittgenstein had argued in his *Tractatus* that if sentences are to be meaningful they must mirror reality in the same way as a picture does. Like his teacher, Russell, who claimed that for sentences to be meaningful they are to correspond to atomic facts, the early Wittgenstein of the *Tractatus* also emphasised that only statements about facts are meaningful (Wittgenstein 1921:12).

Official logical empiricism is foundationalist and reductionist, looking to the meaningfulness of directly empirical and in that way synthetic of completely analytic sentences to explain all other meaning. However, these doctrines of foundationalism and reductionism soon came

---

<sup>4</sup> Logic is used in the reconstruction, but is itself not reconstructed. Does logic in that case represent an exception to empiricism, an exception to the verificationist stand-point? Carnap has a complicated answer to this question. In Carnap, different from other empiricists, logical reconstruction is meant to carry us away from an overly verificationist approach – it is meant to show how what ultimately is grounded in experience can link to experience obliquely and richly. (See Charles Morris. “Pragmatism and Logical Empiricism”, ed. P.A.Schilpp, *The Philosophy of Rudolf Carnap*, La Salle and Chicago, Open Court, (1963): 87 – 98)

under critical scrutiny even of logical empiricists themselves. Neurath, for example, later challenged the general principle of the verificationist criterion. Neurath rejected the foundationalism implicit in the theory of language of the early Wittgenstein and he attacked Wittgenstein's analysis of the relationship between language and reality (Rockmore 2004: 113-114). Neurath rejected the notion that reality must presuppose singular sentences. In his own words, "the fiction of an ideal language constructed of clean atomic sentences is just as metaphysical as the fiction of Laplace's spirit" (Neurath 1932: 204). What Neurath proposed was the existence of an 'actual' language that would allow a number of possible analyses instead of a singular ideal language, in Wittgenstein's terms, which permits not more than one possible analysis. So, under the influence of Neurath, Carnap abandoned foundationalism. He shared from Neurath the terminology of 'protocol sentences' but felt that Neurath's protocol sentence raised too many practical complexities. Consequently, Carnap adopted a conventionalist and pragmatist approach toward protocol sentences. For Carnap, by then perhaps under the influence of Popper, any concrete physicalist statement could be used as protocol or basic sentence<sup>5</sup> (Sarkar and Pfeifer 2006: 612). Also, following after the significant criticism of verificationism that Popper mounted, Carnap changed his position once again. He took the degree of confirmation for scientific propositions to be something already logically rich that connects these propositions to experience. Further discussion on Carnap's later change of ideas from verificationism to the degree of confirmation occurs later in this chapter.

When Wittgenstein changed his thesis of a "picture theory of meaning" to "language game theory", he had himself become critical of logical empiricism. The later Wittgenstein disagreed with the verification principle, claiming that sentences do not have to picture reality. Thus, metaphysical sentences do not need to be meaningless according to the later Wittgenstein.

Nazism flushed the logical positivists out of German speaking lands mostly into English speaking lands. This did not end but rather changed the context for the mid-twentieth-century prominence in philosophy of logical empiricism. Likewise Nazism flushed Popper initially to England and then to New Zealand. He later returned permanently to England and never again

---

<sup>5</sup> Popper mentioned that his discussion with Carnap and the subsequent reading of his unpublished manuscript by Carnap significantly influenced the development of Carnap's idea on Protocol-Sentences. Carnap also was said to have acknowledged the views of Popper on procedure B which he regarded as the best available in the theory of knowledge. Meanwhile, Neurath held different philosophical views from Popper and never accepted the theory of falsification. See Popper's *Unended Quest* pp. 89-90 and also *Conjectures and Refutations* pp. 40-41, footnote 5.

set himself up in German speaking lands. If Hegelianism and Marxism had helped to produce political effects including the rise of nationalism and social radicalism in Europe, they also flushed some of their very significant intellectual critics to far parts of the world. The rise of Nazism and its impact on the European Jewish culture had significant consequences on the personal lives of the empiricists and logical empiricism as a movement as it also had on Popper.

The confidence that Popper displayed to robustly challenge the verificationism of the empiricists is remarkable, especially since he was indebted to them and was somewhat similarly a refugee from the Nazis. The positivists were individuals who wielded significant influence during that period within the diverse fields of science and philosophy, from physics to mathematics, logic, psychology, social science and economics. It is remarkable how quickly and well Popper diagnosed that this influence by the logical positivists was usually not healthy for those fields. Popper's concerns with concepts such as the unity of method in science and with discovering a criterion for demarcating science from non-science are symptomatic both of his indebtedness to the logical positivists and of his wanting to separate himself from them. Popper shared with the positivists' significant high regard for the new logic and for logical analysis.

Popper's *The Logic of Scientific Discovery* (1934) was published as a critique of logical empiricism. Central to this critique was his attack on verificationist criterion of meaning, that is to say, the verification principle. Popper replaced verification by falsification not so as to explain differently the meaning of sentences but rather just so as to demarcate science from pseudoscience. Popper believed that the logical empiricists were mistaken when they conflated two quite different philosophical problems, the problem of meaning and the problem of demarcation. They had used their verification principle as a solution to both the problem of meaning and the problem of demarcation. For Popper, falsificationism is the thesis that a hypothesis can be termed scientific only if it has the potential to be refuted. A theory is scientific only if it is falsifiable. Popper thus used falsification as a criterion for demarcation to distinguish the true scientific attitude from the unscientific. The true scientific attitude, according to Popper, is witnessed in Newton's theory of gravitation as well as Einstein's theories of relativity (so that a contention does not need to be right to be scientific). The true scientific attitude differs from that by Marxists toward their Marxism, or by Freudians toward their psychoanalysis, or by Adler towards his individual psychology, for by their attitude these various thinkers render what they espouse immune from potential falsification. They are

dogmatic rather than critical, so what they offer is mere pseudo-science. But that is not to say that it is meaningless, in Popper's opinion.

### **On the demarcation of science**

Marx, Freud and Adler, Popper came to think had insulated their theories in such a way that made them answerable only to verification or confirmation. Einstein's theory, on the other hand, has testable elements in it so that it stands at risk of refutation. Popper contended that you sometimes cannot consider strictly in terms of logic alone whether a way of thinking is falsifiable. Marx's theory is rendered unfalsifiable by the methodology of its adherents, not by its very logic, Popper averred. To grasp a better way to demarcate science from pseudo-science or science from metaphysics is at the same time to spot a limit of logical analysis.

In Popper's view, a pseudoscientific method may well appeal to observation and experimentation. For instance, astrology claims to possess overwhelming empirical evidence in its favour based on observation. Astrology claims to be about the empirical world. But because there is no potential to use experience to refute astrology, astrology fails to adhere to acceptable scientific standards (Popper 1963: 44). That is what makes astrology a pseudo-science.

Popper contended that Marx's theory of history had already been falsified by events of history<sup>6</sup>. Yet for all of that, Marxists showed no inclination to give the theory up. For them it was an unfalsifiable theory, Popper argued. So the Marxists were not after all scientists, nor is Marxism a science. By contrast, Popper claimed that both Freud's psychoanalysis and Adler's individual psychology could not possibly be refuted. The problem was not in the practitioners so much as in the theories themselves. For logical reasons to do with what these theories state, the stream of observations or confirmations that were supposed to verify these theories had no bearing on whether these theories are scientific. For, experience had never possessed the potential to falsify these theories (Popper 1963: 34). He illustrated this by two different examples of human behaviour: "that of a man who pushes a child into the water with the intention of drowning it; and that of a man who sacrifices his life in an attempt to save the child" (Popper 1963: 34). From Freud's perspective, the first man would have suffered from psychological repression, probably originating from an Oedipus complex whereas the second had attained sublimation.

---

<sup>6</sup> I shall comprehensively discuss Popper on Marx in Chapter 5 of this dissertation on how Popper's refutation of Marxian historicism led to the development of Popper's political thought.

From Adler's perspective, the first and second man suffered from feelings of inferiority and had to prove himself which drove him to commit the crime or, in the second case, rescue the child (Popper 1963: 34).

Popper was not able to find any counter-examples of human behaviour that would not be explained in the terms of Adler's or Freud's theory. So Popper argued that observation always confirms or agrees with the theory, in both Freud and Adler. This fact, rather than being their strength, was actually their weakness, Popper argued. In contrast, Popper made reference to Einstein's gravitational theory which Popper claimed predicted that "light must be attracted by heavy bodies (such as the sun); precisely as material bodies were attracted" (Popper 1963: 36) Following from this, stars closer to the sun would appear to have moved a small distance away from the sun, and away from each other. This prediction was particularly striking to Popper because it involved considerable risk. The brightness of the sun prevented this effect from being observed under normal circumstances, so photographs had to be taken during an eclipse and compared to photographs taken at night. Popper stated, "If observation shows that the predicted effect is definitely absent, then the theory is simply refuted" (Popper 1963: 36). To Popper, the scientific status of a theory depends on its falsifiability, refutability, or testability.

### **Summary: the context of Popper as philosopher of science**

Many scholars have wondered why Popper claimed in his *Unended Quest: An Intellectual Autobiography* that "logical positivism is dead... [and] I fear that I must admit responsibility" (Popper 1974: 88), when clearly logical empiricism exerted a considerable influence on the development of his philosophy of science. It is essential to point out that Popper's claim to have killed logical empiricism was not an indication of rancour and disaffection between him and the empiricists; members of the Vienna Circle were also not unreceptive to falsification theory. Popper acknowledged the support of members of the Vienna Circle, particularly Carnap and Herbert Feigl (1902- 1988), whose several discussions with him helped in the formation and clarifications of thought on falsification and demarcation. Although some logical empiricists, such as Neurath, shunned the theory of falsification after the publication of *The Logic of Scientific Discovery*, many others, such as Carnap, embraced the theory of falsification as an extension of the idea of verification rather than a competitor idea. After all, even though Popper criticised the verification principle, his subsequent replacement of it with falsification theory is clearly in line with an idea that many positivists held, that knowledge can advance

only through criticism. “Hypothetico-deductive empiricism” was the common possession of Popper and many of the positivists. The continued discussions Popper had with Carnap in their published correspondences on important issues in philosophy of science such as corroboration versus confirmation and in social philosophy such as on the status as pseudo-science of Marxism clearly indicates that there was mutual respect between them (Shearmur and Norris 2008b: 85-108)<sup>7</sup>. Yet I have argued above that Popper learned mostly by negative example from the logical empiricists. Popper resembled them in taking as his starting point the need to update and suitably revise the philosophy of science of Kant. However, Popper did not suppose as the positivists did that the chief issue to address was that of meaning. In limiting philosophy to logical analysis, the positivists left themselves no room to concede the enduring significance of some very large problems of philosophy. An illustration of their mistake is Wittgenstein’s exploring not half as deeply as Kant the reasons to prioritise inter-subjectivity to subjectivity. I have argued that Popper does recognise deep reasons to prioritise inter-subjectivity to subjectivity, or at least to balance the competing poles of individualism and communitarianism. This balance in Popper is a reflection of Popper’s enduring respect for Kant.

### **Popper: Personal, Social and Political influences**

Beyond all of the above, this section explores several important personal, social and political influences on the development of Popper’s philosophy. Hacoheh’s independent biography of Popper’s formative years from 1902 to 1945 remains the most comprehensive account of this development outside of Popper’s own *Unended Quest*. I will consider in relation to Popper’s own account four significant factors that can be discerned as having tremendous impacts on the life of Popper and the development of his philosophy. The four revolve around the social and political turmoil in Austria in the early twentieth century. I look to them for further understanding of the balance in Popper between individualistic and communitarian tendencies.

First, in 1919 Popper became attracted to Marxism (Hacoheh 2001:23). He declared in his *Unended Quest* that at that youthful time he was a communist and had even joined the communist party (Popper 1974: 34). However, the death that occurred of young Marxian

---

<sup>7</sup> There is an array of correspondences that transpired between Popper and Carnap. This reveals the continued contact with members of the Vienna Circle. It also reveals a number of discussions ranging from the problem of probability theory to the theory of confirmation, to dialectics, to social and political philosophy. Issues of personal concerns on health and welfare were not left out. In his later writings Carnap recognized both the problems with the classic verification principle and Popper’s falsification principle and proposed a more liberal criterion of confirmability. See Jeremy Shearmur and Piers Norris (eds.) *After the Open Society*, 2008.

protesters that the police opened fire on after a demonstration changed Popper's disposition to Marxism. Popper was negatively impressed by the willingness of some adherents of Marxism to put their own or others' lives at risk for the sake of promoting an ideology. Popper felt some personal responsibility for the incident that brought about the death of these innocent young protesters, because he had endorsed the idea of revolution, as part of the struggle to overcome capitalism and hasten the coming of socialism. He was dismayed by the attitude of the communist to "arrogate to oneself a kind of knowledge which made it a duty to risk the lives of other people for an uncritically accepted dogma" (Popper 1974: 34). Popper thought the underlying reason he joined one of the communist groups seeking political and economic change was because of the promise of a better world. Popper soon discovered that these underlying reasons were nothing more than propaganda. He became disillusioned by what he saw to be the pseudo-scientific historical-materialism of Marx. He became appalled by the facile confidence of Marxists' promise of a better world, which communism hopes to realise, and he regarded this promise as a pipe dream that was not realisable. His thinking led him to believe that those promises served sharply only to aid individuals seeking political power. In Popper's view, only piecemeal changes to the society make better reform<sup>8</sup>.

One of the themes that Popper rejected in Marxism is its revolutionary stands. Popper was an anti-revolutionary whose philosophy of piecemeal reform represents a form of conservatism. He did not advocate a radical change but a disposition to changing one thing at a time. Although Popper was averse to Marxism because of its historicism, his value system accentuates an ideology which promotes both the freedom of the individual, as well as about public policy and the alleviation of suffering rather than promotion of happiness. This heralds his idea of negative utilitarianism: a public policy which aims to alleviate suffering for the greatest number of people than promoting happiness. This idea of negative utilitarianism exhibits an element of the individual and the social. 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

---

<sup>8</sup> The discussion on piecemeal social change as alternative to large-scale planning that characterises Marxism will become the major crux of Popper's critique of historicism and holism. A comprehensive discussion of Popper's arguments against Marxism shall come in chapters 4 and 5 of this dissertation.

these ideas that Popper's concept of social liberalism is built, or what I call Popper's enduring liberal-communitarianism.

Second, the period after 1928 when Popper got his PhD under the supervision of Karl Buhler, marked the beginning of his intellectual career. Although he started as a teacher of mathematics in a secondary school in Vienna the ideas on the criteria of demarcation between science and pseudoscience preoccupied his mind. He was concerned about how philosophers of science had continued to use the inductive method as the criterion of demarcation. In Popper's view, testability or falsifiability was the better criterion of demarcation (Popper 1974:79)<sup>9</sup>. The ideas of falsification which Popper anchored on the theory of hypothetico-deductive methodology are expressed to establish the basic form of scientific method. To Popper, "the method of science is not inductive" (Popper 1974: 81). Although Popper's idea of falsification is expressed as a single methodology of scientific method, its inherent themes of fallibilism and inter-subjective criticism are founded on the dependency of science on the social community.

Third, the aftermath of the annexation of Austria by Nazi Germany and the apparent rise of totalitarianism in Europe which led to the dispersing of many intellectuals including Popper and members of the Vienna Circle had both various negative and various positive effects on the development of Popper's philosophy. Popper was no doubt supremely well suited to the intellectualism and critical scholarly engagement that there had been in Vienna, to the extent that its being decimated must have been a great blow to him. Many of the members of the Vienna Circle went into exile in the USA while Popper also migrated first to England and later to New Zealand where he got a job at Canterbury College of the then University of New Zealand, from which he later returned to England. These dislocations could not have been a help to Popper, except perhaps by focusing personal rage into the "war effort" work *The Open Society and Its Enemies* on which Popper was then working. A positive effect for Popper of all these changes is that in the British influenced part of the English-speaking philosophical world they allowed the dominant scientific-philosophical tradition to shift from verification to falsification. In the United States, logical positivism continued as the more dominant philosophy of science. However because Popper's ideas of science flourished ahead of logical positivism in countries such as the United Kingdom, New Zealand and Australia after his

---

<sup>9</sup> Discussion on Popper's argument on falsifiability as the criterion of demarcation will be examined in chapter 2 of this dissertation.

migration from Austria, especially after and the 1959 publication of the English translation of the *Logic of Scientific Discovery*, one could count his forced migration from Austria a significant benefit to Popper. Popper's ideas consequently supplanted those of the logical positivists in many places to become the modern philosophy of science. Popper took on standing as paragon of the advancement of the logic and methodology of science. Just as there is a balance of individualistic and social tendencies in Popper's understanding of science, Popper's own idea of falsificationism as a theory of science was made possible not only by the singular or individual effort of Popper but significantly as outcome of his critical engagements with others, especially with the logical positivists.

Fourth, Popper's migration to Canterbury University College, Christchurch, New Zealand in response to an advertisement for a teaching position in philosophy in 1937 and becoming the only philosophy lecturer at the university at the time also remains one of the most remarkable periods in his intellectual development. It was remarkable because in the midst of a hostile attitude to research, since the focus of the University then was teaching, Popper was still able to make time for his personal research and development. So, in New Zealand, Popper refocused his philosophical writings onto social and political philosophy. The reality of suffering, exploitation, war and totalitarianism that necessitated his move from Austria to New Zealand inspired this shift in interest towards the philosophy of the social sciences. His interest was motivated by the rise of totalitarianism in Europe. He made inquiries into the methodology of the social sciences. These inquiries resulted into his writings of *The Open Society and Its Enemies* and *The Poverty of Historicism*.

Of great importance about Popper's venture into social and political philosophy was his attempt to establish an ideology for human freedom, which he realised was not present in the totalitarian society of Europe at the time. In establishing an ideology for human freedom Popper was motivated by the Kantian ideologies of ethical individualism as well as the three formulations of categorical imperative. Popper also acted as a re-creator of the Kant's essay "What is Enlightenment", stepping forward within the troubled times he lived in much as a figure such as Kant would have recommended. This undoubtedly meant that, with Kant, Popper ever balanced individualism with communitarianism in his thinking. Also, Popper was inadvertently influenced by Wittgenstein's idea of speech community. These ideas generated in Popper the need to establish a liberal ideology that would recognise the primacy of individual freedom, while at the same time it does not require a disregard for the value of community. This forms

the basis of the individual and social aspects of Popper's political philosophy. It establishes a balanced philosophy of Popper's liberal-communitarianism.

It is clear that the underlying balanced philosophy of the individual in relation to the social that is both at times explicit and ever implicit in Popper's philosophy are thoroughly evident both in the development of his philosophy of critical rationalism and in the significant impacts of his life experiences. For what it is worth, it can be argued that from the experiences of his life Popper not only developed a penchant for critical attitude but also an ever deepened compassion for others. He was critical of the pre-existing scientific methodology of verification and replaced it anew with falsification. He also became critical of Marxism which he averred motivated the rise of collective totalitarianism in the political society in Europe at the time. He termed Marxism a historicist/holist ideology, and instead introduced an anti-revolutionary cum conservative ideology in the form of piecemeal social engineering. He held Marxism to have encouraged a collectivist philosophy which had no respect for the sanctity of human freedom. Popper therefore made inquiries into the methodology of the social sciences in order to accentuate a liberal philosophy that recognises the primacy of individual freedom and that gives respect to the nature of human social character. Yet through it all Popper maintained some of the socialist attitudes of his youth. This constancy, this way of being conservative of values even in acts of intellectual boldness, is essential to Popper's courageousness in philosophy and in the world.

Apart from establishing a coherent balanced philosophy of the individual and the social in his critical rationalism, the life of Popper could also be said to have been an exemplar of his philosophy. His migration from Austria to England, later to New Zealand and back to England in a succession of scholastic progress and improvement is a living example of his article, *All Life is Problem Solving* (1999). The very basis of the idea in the article is on the apparent progress of scientific knowledge, and how we are served to understand how the universe seems to improve over time. Such improvement is the life that Popper lived in a succession proceeding by conjecture and refutation as a means of progress.

As a way of concluding this chapter, it is important for me to mention that what I say was an enduring liberal-communitarian directedness in Popper would read as novel to many scholars. Most Popper scholars have contended that what is prevalent in Popper's critical rationalism is his idea of individualism. However, for reasons that I have laid down in my arguments on

Popper's liberal-communitarianism it seems clear that Popper's critical rationalism consist of both individual and social aspects. I will go on to argue in the next chapter that Popper's official anti-inductivism is but one pole, for which another pole in his philosophy provides needed balance. Those further arguments will also seem controversial, but they are true to the intellectual in question, who successfully lived a richly complicated life.

Let me also remark that a great number of misunderstandings revolve around reactions to the personality of Popper. Popper lived for his work but many people judged him egoistical and arrogant. Much as Socrates' method of dialectics made Socrates both significant friends and significant foes, Popper's manner of posing philosophical puzzles to his colleagues and attempting falsifying their responses was not always well received. His intention was never to belittle the philosophical positions of others but to stimulate arguments. He regarded philosophy as problem solving. He was frequently noted to always be grappling with one philosophical problem or another at any point in time. His fallibilism encompassed both his work and personal life as he constantly reviewed his drafts and questioned the rationalisation of certain actions. Although he was not very interested in meta-ethical issues, he was concerned about public policy issues (Sheamur 2011: n/p). More fundamentally, he was concerned about how to enthrone the essential liberal-communitarian aspects of his political philosophy that would enhance the openness of society. His thought was that an open society could be achieved by the critical method that characterises the method of science.

What constitutes the philosophy of science in Popper will therefore be examined in the next chapters (Chapters 2 and 3). Chapter 2 focuses on the central thesis of Popper's critical rationalism, and addresses the central themes of fallibilism and inter-subjective criticism. Here I will advance the surprising claim that Popper was himself in the end an inductivist. Chapter 3 examines the notion of the unity of method in science. Here I will advance the surprising claim that Popper chiefly accentuates pluralism about scientific method.

## Chapter Two: Popper's Critical Rationalism: Fallibilism and Inter-Subjective Criticism<sup>10</sup>

*Of course, I may be mistaken; but I think that I have solved a major philosophical problem: the problem of induction. ... This solution has been extremely fruitful, and it has enabled me to solve a good number of other philosophical problems.*

*(Popper 1972: 1)*

### Introduction

I have shown in the previous chapter on the intellectual background to Popper's philosophy that his philosophy of science included a balance between individualist and communitarian aspects, and that his philosophy of science was developed to counter logical empiricism. Popper rightly recognised that logical empiricism conflated the problem of meaning and the problem of demarcation, and that logical empiricists were mistaken to use the verificationist principle at all, let alone to use that principle as their attempted solution to both these problems. Popper remarked that for consistency the charge of empirical meaninglessness would need to be made against logical empiricism itself, yet that irony or paradox for logical empiricism simply showed that the logical empiricists were pursuing a misguided line of thought (Popper 1959: 250-252). Popper refused to recognise their "problem of meaning" either as crucial for understanding science or as liable to be answered in any single self-consistent way.

Popper sought to take philosophy of science in a different direction for two principal reasons:

(a) The logical empiricists, such as A. J. Ayer and the early Rudolf Carnap, were foundationalists: for the support of science or rational justification, they required there to be an empirical foundation. Foundationalism is the view which sees every proposition as requiring empirical justification to support it. Ayer (1936), for instance, in his *Language, Truth and Logic*, insisted that sentences need to be supported by evidence. Ayer proposed that sentences gain their meaning by how they can be verified, but they nevertheless cannot be conclusively verified. The logical empiricists themselves waived concerning their commitment to foundationalism. Carnap (1947) under the influence of Neurath, later abandoned that stance, even rejecting verificationism, in favour of the concept of the degree of confirmation in severe

---

10 Material covered in this chapter has previously been published in Afisi, Oseni Taiwo. "Popper's Critical Rationalism: Corroboration versus Confirmation". *Philosophy Study* 3.6. June (2013): 506-516.

testing of scientific hypothesis. Popper by contrast was consistent in his criticism of foundationalism, and would not agree even with Carnap's eventual view, since it traded in what to Popper was the doubtful idea of evidence for a theory.

(b) The logical empiricists were verificationists, who wielded the mistaken positive idea of verification as their way of demarcating science from non-science. That is, they sought to explain the difference between science and non-science by reference to the idea that science alone is meaningful, that meaningfulness consists in verifiability, and that science is steadfast in its orientation to empirical verification. Popper by contrast emphasised the negative idea of testing, or thus the idea of the susceptibility to falsification as hallmark of scientific thinking.

Popper systematically disputed both the very idea of foundations for science and also the very reality of empirical justification. In Popper's view, without empirical justification, verificationism falls. In place of foundationalism, Popper fully endorsed the philosophical position known as fallibilism according to which all our knowledge of the world is provisional and amenable to corrections. Popper in *The Logic of Scientific Discovery* had introduced the notion of 'basic statements' that for the time being are treated as empirically known. Metaphorically this is where there is traction logically for experience for shaping potential criticisms of a theory. However, all such 'basic statements' are themselves fallible, since they will not fail to incorporate some theoretical meaning. That is to say, given sufficient change in thinking, for example the change that is wrought by a shift of concepts, what had been admitted as 'basic statements' would seem neither any longer so, nor potentially any longer acceptable as true. Popper (1959:111) writes:

*The empirical basis of objective science has thus nothing 'absolute' about it. Science does not rest upon rock bottom. The bold structure of its theories rises, as it were, above a swamp. It is like a building erected on piles. The piles are driven down from above into the swamp, but not down to any natural or 'given' base: and when we cease our attempts to drive our piles into a deeper layer, it is not because we have reached firm ground. We simply stop when we are satisfied that they are firm enough to carry the structure, at least for the time being.*

A good example of the kind of change that Popper was here allowing for is that that Einstein wrought when Einstein changed some of the concepts of physics. For example, general relativity theory absorbs into the concept of 'mass' the very concept of 'weight'<sup>11</sup>. Consider

---

<sup>11</sup> I learned this from personal discussion with Philip Catton.

some Newtonians, who are simply standing on their feet. They feel pressure on their feet. A basic statement for them might be that the pressure onto the ground from their weight is balanced by an automatic upward pressure from the ground onto their feet. The balance of pressures, they say, is why, despite their weight, they are not accelerating downwards. That is how they conceive the pressure that they are feeling on their feet. Yet Einsteinians have significantly different concepts for understanding even such basic seeming experience. Einsteinians deny that the pressure is from gravity pulling downward. Einsteinians say that there is just the pressure upward. This unbalanced pressure *is* accelerating the Newtonians, the Einsteinians would say. The Newtonians are being accelerated away from the straightest trajectories that they might otherwise be following. This is the Einsteinian conception. Gravity is inertia, requiring that space-time be curved or non-Euclidean. (The geometry of space-time is “semi-Riemannian”.) That means that the Einsteinian drives the piles deeper into the swamp. Their basic statement concerning what they feel in their feet is different. Their basic statement concerns not a balanced pressure, but an unbalanced one.

Popper (1959: 37) also rejected the programme of demarcating science from non-science with the system of meaningfulness pseudo-statements. Popper held that verificationism is not even coherent as a doctrine of meaningfulness. In place of meaningfulness as a demarcation criterion, he emphasised merely the critical method; in place of verification, he emphasised falsification or criticism.

In this chapter, I examine Popper’s critical rationalist perspective on science and I emphasise Popper’s fallibilism and Popper’s own stress on inter-subjective criticism. I examine how Popper developed a hypothetico-deductive account of scientific method into a theory of corroboration. Popper’s idea of corroboration tracks severity of testing: the severer the test that a theory manages to pass, the more highly ‘corroborated’ by its passing that test the theory is. I will argue that without a kind of inductivism, Popper could not have his idea of severity of testing. (But a flip-side of this is that by stepping back from avowedly inductivist empirical methods like that of the Bayesians you can see an analysis of severity of tests.) I will show that in Popper’s way of balancing individualism and communitarianism, Popper did make sufficient room for the needed inductivism. I will also discuss how some richer methodological conceptions (such as the bootstrap methodology of Clark Glymour (1942- ) or such as Bayesian methodology for example as that is worked up by Wesley Salmon (1925-2001) into a theory of ampliative inference) to which the deductivist Popper has every reason to be open can further

ground Popper's idea of severity of testing. Thus I work hard to save Popper's idea of corroboration of theories from criticisms that trade on the idea that in its anti-justificationism or strict anti-inductivism the concept of corroboration collapses in on itself. Yet by defending as I do the concepts of severe testing and of corroborations, I draw into doubt whether Popper can after all reasonably discard the notion of confirmation. He does not quite get away with his official anti-justificationism, or with his official anti-inductivism, I will argue. 'Corroboration' is a workable concept that is utterly important for the understanding of science. But over against Popper himself, 'corroboration' is a fallible kind of *confirmation* in the view of it that I will defend. However, I do not need my partly inductivist or justificationist defence of critical rationalism to succeed, if there is a consistent anti-inductivist or anti-justificationist defence of critical rationalism that succeeds. David Miller (1942- ) has attempted such a defence that I will briefly discuss (much as Alan Musgrave (1940- ) independently has done). If such defences of critical rationalism succeed there remains the question which defence is better, mine for respecting a kind of balance in Popper's philosophy, or theirs for respecting Popper's strident anti-justificationism. Yet, that issue is not crucial to this thesis. The main point for this thesis is that critical rationalism has proved defensible.

In my Chapter 3 I will further explore the idea that by stepping back from various methodologies you can make them all out as illuminating severity of testing. Corroboration in that case gains generality as a core methodological concept. By being methodologically pluralist, you can better acknowledge the strengths of Popper's critical rationalism. In Chapter 3 I will argue non-standardly, that Popper, despite his official doctrine of the unity of method or rather in support of it, was himself methodologically pluralist.

In my Chapters 4 to 10, Popper's general concepts of hypothetico-deductive methodology, severe testing and corroboration of hypothesis, are shown to carry over into Popper's distinctive views about social science, particularly as science relates to politics. The critical rationalist perspective on science presents an officially non-justificationist theory of scientific knowledge. I defend the emphasis on criticism but not quite the non-justificationism of Popper's official perspective. Moreover, I make out how Popper himself created room (whether he admits this or not) for the necessary (seriously stripped-down) elements of justificationism. Popper extended his project of critical rationalism to all areas of thought. In each field, the central task of critical rationalism is to supplant overtly justificatory methods with critical ones. This explains Popper's application of his (largely) non-justificationist perspective to new fields

in his *The Poverty of Historicism* and *The Open Society and Its Enemies*. Roughly, Popper applied his critical methodology for the physical sciences also to the social sciences. Both *The Poverty of Historicism* and *The Open Society and Its Enemies* defend the open society on the grounds that only open societies preserve reason, that is, criticism, and as a consequence, only open societies can be civilised and can be saved from the barbaric consequences of fascism or communism.

In examining the fallibilist and anti-foundationalist position of Popper on science, the present chapter extracts from the balance between individualism and communitarianism in Popper a set of reasons not only to turn as Popper did from the positive idea of verification to the negative idea of falsification but also to acknowledge officially, as Popper did not acknowledge officially, how the needed account of corroboration is not wholly anti-inductivist after all. Popper believed he had turned his back on induction. He believed he had ‘solved’ the ‘problem of induction’ by providing a non-inductive account of corroboration. I support Popper most of the way but not quite all the way with respect to claims like these. Popper used the term ‘corroboration’ rather than ‘confirmation’ since he believed that the latter term is too closely allied to the notion of the inductive or probabilistic support that a theory can receive from evidence. Salmon’s (1967) “concept of confirming evidence” and Glymour’s (1980) “bootstrap conception of evidence for theory” both imply on the contrary that corroborated theories have (by the very fact of their having been corroborated) been confirmed by evidence or warranted by evidence so that the corroboration has lifted their degree of warrant or probability. Whereas Miller restates and defends Popper’s critical rationalism over against Salmon and Glymour, I aim for an accommodation of Popper to Salmon and Glymour, that I argue still maintains the intended core of critical rationalism. Miller’s repudiation both of ampliative inferences and all conceptions of confirming evidence perhaps better expresses hard-line critical rationalism. However, I do not think that it allows adequate recognition of what I call balance in Popper. That is why I attempt to reposition Popper’s hypothetico-deductive corroboration in order to acknowledge a certain unavoidable “whiff” of inductivism in that concept<sup>12</sup>.

---

12 Newton-Smith had drawn up arguments against Popper to reveal that there is “a full-blown storm” of induction in Popper’s conception of science contrary to what Popper himself acknowledged as a “whiff of inductivism here”. Newton-Smith’s argument is that since Popper himself concludes that there is an agreement between verisimilitude and corroboration of theories, Popper cannot but be himself committed to science being an inductive process. For if current theories have greater verisimilitude than previous theories, and if current theories have a greater degree of corroboration than previous theories, then corroboration is a sign of verisimilitude. Newton-Smith insists that this is an inductive argument twice over, since nothing but an inductive argument can establish

## On Critical Rationalism

Popper insisted that any element of presumed knowledge should be held tentatively, precisely by holding it open to potential criticism. Critical rationalism emphasises that all empirical forms of knowledge must be put to the test of criticism, and that only those that are put to the test of criticism can properly be termed ‘scientific’. The progress of knowledge, in Popper’s view, is concerned with falsifying one’s theories or with thereby eliminating error from one’s theories. Theories are but tentative conjectures, so the progress of knowledge is by conjecture and refutation. This process promotes to tentative standing as knowledge only those scientific theories that have so far withstood testing without yet being falsified by evidence (Popper 1945b: 260). Any such presumed knowledge must be potentially falsifiable in order to be admitted to the body of empirical science. The body of presumed knowledge changes frequently by rejection of the specific theories that evidence has refuted and by the consequent re-adjustment of concepts. That refutations, too, are fallible, must also be admitted, partly because refutations depend on fallible ‘basic statements’ whose meaning would be changed and whose truth-assignment could be changed if the concepts involved in them change appreciably (like in the Einsteinians-versus-Newtonians example concerning the pressure that persons when standing feel in their feet, that I mentioned above). In any case, Popper does not expect that change of concepts is ever altogether sweeping. Not only does Popper refuse to countenance revolution in the political world. Popper also refuses to countenance revolution in science.

Popper the anti-revolutionary conceived that every bold new conjecture conserves a lot even as it alters some things. The point is that the cut and thrust of conjecture-refutation-and-new-conjecture-seeking-new-refutation is intellectual. No-one needs to die in order for there to be progress. Ideas can die and be replaced, all in people’s stead. But the process is conservative of former values or former concepts. Not all former values or former concepts are conserved, but most are. As Chapter 1 showed, significant conservation of values is necessary if the bold intellectual work of theorists is to be courageous and not vandalistic. Courage not vandalism can require that *any* element of presumed knowledge is open to criticism but cannot require

---

the conclusion that a current theory has (by and large) more verisimilitude than a previous theory. For more on a “whiff” of inductivism in Popper, see Newton-Smith 1981 pp.67-70

that *all* presumed knowledge may be reconsidered as a whole all at once. To reconsider everything all at once would be vandalism pure and simple in Popper's anti-revolutionary view.

Yet Popper poured scorn on the idea that changes even that are courageous can make convictions more "probable" to be true. Falsified former beliefs are not ruled completely improbable, since refutation is itself fallible. However, corroborated hypotheses or theories, no matter how severe the relevant tests had been, do not amount to probable knowledge. They amount only to tentative, possible knowledge. According to Popper, "the old scientific ideal of episteme – of absolutely certain, demonstrable knowledge – has proved to be an idol. The demand for scientific objectivity makes it inevitable that every scientific statement must remain tentative for ever" (Popper 1959: 280). It is the *least* probable theory that still withstands attempts to falsify it that is the theory that is to be preferred. These are the criteria that Popper used in his attempts to distinguish science from non-science. I do not believe I weaken this claim of Popper's, if I argue that corroboration of theories does 'probabilify' them. Theories are in their boldness not probably true, but I will argue that the probability that they are true nevertheless moves upward the more severe tests they pass. Popper did not espouse this latter argument, but I will explain why I think that his general position can well accommodate it.

Popper rejected the criterion of verifiability on the grounds that it rendered laws of science meaningless, and the problem itself as merely verbal and trivial (Irzik 2013). With this, Popper appropriately identified the verifiability criterion as the main weakness of logical empiricism in science. Boldly, he inverted their fascination with verification by instead emphasising falsification, a novel move that proved to be a powerful idea. He was thereby encouraged to develop his alternative understanding of science; his critical rationalist approach. Popper's critical rationalist approach is embedded with features that require knowledge to be conjectural, hypothetical, tentative or fallible. For knowledge to be fallible Popper held:

*[R]oughly speaking, ... what cannot (at present) in principle be overthrown by criticism is (at present) unworthy of being seriously considered; while what can in principle be so overthrown and yet resists all our critical efforts to do so may quite possibly be false, but is at any rate not unworthy of being seriously considered and perhaps even of being believed – though only tentatively.*

*(Popper 1963: 309)*

More fundamentally, Popper used his falsificationism to develop a new version of the Darwinian evolutionary approach and adapted it into an evolutionary approach to knowledge.

Popper likened the manner in which not only scientific but also other kinds of knowledge progress with the Darwinian struggle for existence in nature. What Popper said was that our theories need to survive when tested against their evidential base and many will not survive this test. In this respect, they “die off” like species who do not adapt against the test of a changing environment. This he used to explain how knowledge progresses. In likening progress in science to progress in the living world through Darwinian evolution, Popper proposed to understand life as progressing. He was committed to saying: life progresses through its Darwinian struggle for existence (Popper 1972:19).

It is important to note that biologists are mostly ambivalent to or even opposed to the idea of progress through evolution. Although most evolutionary biologists understand that large-scale macroevolution yields a drift towards there being some more complex life forms they increasingly criticise and avoid the use of the term progress. Their reasons include largely among others that: (a) the term ‘progress’ carries with it historical, theoretical and social implications which are not congruent with modern knowledge of the course of evolution (b) an incongruence exists between the notion of progress and Charles Darwin’s (1809-1882) theory of natural selection (Rosslinbroich 2006:41). Darwin illustrated (b) with his study of barnacles. Natural selection favoured changes away from species with motility, powers of perception etc. to ones that root themselves on rocks. Some male barnacles are reduced to an almost parasitic dependency on the female, except that they are semen factories and necessary for reproduction. Natural selection may as often as not reduce complexity among life forms, at least once there are life forms complex enough for their complexity to be reduced.

Popper arguably is at variance with the majority of biologists in his thinking about evolutionary progress as he did. Famously, Thomas Kuhn (1922-1996) pointed this out (1970: 1-23), professing to employ evolutionary ideas himself about the scientific process. To the extent that Kuhn did use evolutionary ideas that are more like those of Stephen J. Gould (1941-2002), or saltationist, just as Popper’s evolutionary ideas are more like those of Richard Dawkins (1941-), or adaptationist. Moreover, similarly to Gould who denounced the idea of evolutionary ‘progress’ by life, Kuhn used the idea of evolution to reach the conclusion concerning progress in science, that in fact the concept ‘progress’ has limited applicability to science.

I believe that Popper is in a position to view some reductions of complexity of theories as progress, just as he would view some increases of complexity of theories as progress. So, in

my view Popper can deny that the incongruences (a) and (b) apply to evolutionary theory of knowledge. The details of the debate between Popper and Kuhn, let alone the details of the debate between Dawkins and Gould, are beyond the scope of this thesis. Popper's attempt was to embrace and apply the Darwinian principle of natural selection to scientific theories and to other forms of knowledge. His concern was to analyse how knowledge progresses by analogy with the Darwinian form of natural selection through problem-solving and error elimination. Progress occurs, in Popper's view, through the generation of new ideas as a result of error elimination, critical discussion and experimental testing, in that order, and the cycle continues when a new problem emerges. This is the core of Popper's evolutionary epistemology and it is represented in his four-step general schema of problem-solving: P1 ---> TS ---> EE ---> P2. Popper writes: "Using 'P' for problem, 'TS' for tentative solutions, 'EE' for error-elimination, we can describe the fundamental evolutionary sequence of events" (1972 :243). I will assume that Popper's evolutionary epistemology with its understanding of progress is defensible, even if evolutionary biologists mostly adopt different attitudes concerning the word 'progress'.

### **Induction, Corroboration, and Severe Testing of Hypotheses**

Scholars since David Hume (1711-1776) have faced the challenging task of dealing with the logical problem of induction. Induction is standardly regarded as the process of inferring a general law or principle from observation of particular instances. A broader construal of induction depicts induction as a process where the premises of an inductive argument indicate some degree of support (inductive probability) for the conclusion but do not entail it (Vickers 2013). This broader construal of induction suggests that induction imposes elements of probability, which means the certainty of the conclusion is a matter of degree. Certainly not implausible and certainly not logically entailed, inductive conclusions stand as warranted or made more probably true because of evidence that supports them. The idea remains however that induction is dependent on reasoning from detailed facts to general principles.

Hume rarely used the word 'induction' but the underlying principle of his epistemology revolves around the problem of induction. His argument concerns how to rationally justify inductive reasoning in the contexts of uniformity of nature and causation. Hume's argument is that inductive inferences cannot be rationally justified, and this can be shown in two different ways of reasoning: demonstrative (deductive) reasoning and probable (inductive) reasoning.

While Hume contended that the former is “consistent and conceivable” (Hume 1902: 111) with deductive reasoning, the latter cannot hold any form of rational justification.

Clearly with Hume, the problem of induction surrounds simply ‘enumerative induction’. Such ostensible inferences lead from specific observations to a generalisation, but it is impossible to see how they might lead to the kinds of logically richly-structured generalisations that science mostly deals with. ‘All swans are white’ is not a very convincing example of a scientific theory. Its logical richness pales in comparison with, for example, that of the conclusions of Newton’s *Principia*. If simple enumerative induction truly were of paramount significance, then it becomes impossible to understand how science would become logically rich. In particular, as I shall discuss below, if the logical richness of generalisations in science were all on a level with ‘All swans are white’ then ‘bootstrap’ tests of scientific theories would not be possible. In other words, the kind of science that Glymour describes requires logically richly structured generalisations that allow deduction of a theoretical conclusion from a phenomenon, in a way that employs a background of already theoretical further assumptions (Catton 2009b: 4). On this basis one could be led to argue that Hume missed the point.<sup>13</sup> Popper used Hume’s scepticism concerning induction more creatively, as a basis to dismiss the inference form of ‘enumerative induction’ as able to exist at all. Popper insisted that you need to be able to distinguish between ‘good induction’ and ‘bad induction’ in order to point to any induction at all. So if Hume shows that there is no such thing as ‘good induction’, then the conclusion must be that ‘induction’ is an empty concept. We need, Popper insisted, a way of thinking about science that is deductivist, rather than inductivist. Popper used just hypothetico-deductivist thinking to account for science. As I shall soon discuss, Glymour argued that hypothetico-deductivism is too limiting. Glymour’s ‘bootstrap’ account is deductivist in a logically richer way. If I can square ‘bootstrapping’ with critical rationalism, then I can use Glymour to support Popper’s elimination of the whole category of induction in the sense of enumerative induction. The ways that inductivism of some kind might need to be acknowledged after all simply do not concern enumerative induction. They concern something logically much richer about science.<sup>14</sup>

---

<sup>13</sup> See Catton (2009b) for discussion of ‘induction’ as something synthetic and not just an argument form.

<sup>14</sup> Again, Catton (2009b) argues that the richer understanding of induction that is required makes induction out as a synthetic concept. Then induction is not about a single analyzable inference form at all, but rather is about how a concert of inferences, all to one conclusion, inferences that each can be analyzed only as deductive in form, and inferences that each trade in fallible, theoretical premises, confer synthetically a higher kind of warrant on the conclusion.

The key question concerns the defensibility of Popper's critical rationalism. Popper looked for an anti-inductivist, critical-rationalist way to characterise when a theory in science is doing well by the empirical evidence. To this end Popper developed his theory of corroboration (Popper 1959:33). One of the ways to introduce Popper's notion of corroboration is by means of the notion of a severe test.

Popper introduced the term 'corroboration' especially the degree of corroboration to describe the degree to which a hypothesis has stood up to severe tests, and thus 'proved its mettle' (Popper 1959: 248-249). His assertion is that a theory is 'corroborated' so long as it is able to stand up to these severe tests. Popper's emphasis is on the idea of a severe test as opposed to those tests which involve evidence similar in kind to that already gathered in support of a theory (Popper 1957: 269).

An illustration of a severe test of a theory is when the wave theory of light was found to predict that in the centre of the shadow of a circular disc that is illuminated perpendicularly on one side by coherent, monochromatic light there should be a bright spot. Background thinking suggested that there should be no brightness anywhere in a shadow. So apart from the wave theory, no-one expected that there should be brightness at the centre of the circular shadow. In fact it was proponents of the rival theory, the particle theory of light, who pointed out that the wave theory of light must make this prediction. Proponents of the particle theory thought that this consequence refutes the wave theory. Nevertheless, when the experiment was tried, the bright spot was detected, right where the wave theory of light predicted that it would be found. So this was a very severe test of the wave theory of light, which the wave theory of light passed just fine.

In Popper's view, the number of corroborating instances determine the degree of corroboration, and also the severity of the various tests to which the hypothesis in question has been subjected that it has also passed determines the degree of corroboration. A theory that has passed many very severe tests may be termed 'highly corroborated'.

Popper pointed out that pursuit in science of highly corroborated theories proceeds best if science is not only highly critical, that is to say, highly devoted to testing its theories, but also if it keeps its theories bold and simple. A simple, unqualified generalisation is more testable than a complicated, highly qualified generalisation. Therefore, the degree of testability of the simple, unqualified generalisation is greater. Bold, simple theories will predict more things,

and will predict more things that background thinking would have led one to expect would be false. So, bold, simple theories will be able to be tested in more ways and more severely. That is why the pursuit in science of highly corroborated theories determines that the theories in science tend to be bold and simple.

Popper gave this explanation as a way of illustrating that his solution to the problem of induction leads to solutions of other problems, including metaphysical problems about science. One may wonder why science does seem to prefer simple, unqualified theories to complicated, highly qualified ones. This seems to beg a metaphysical question concerning whether the world is simple. However, Popper answered in a way that is methodological. Science seems to prefer simple, unqualified theories to complicated, highly qualified ones, because science pursues highly corroborated theories. One would not achieve highly corroborated theories unless one's theories are bold and simple. The hypothesis which is falsifiable in a higher degree, or the simpler hypothesis, is also the one which is corroborable in a higher degree (Popper 1959: 250) unless, of course, it is refuted. In Popper's estimation, the more a theory is corroborated the better testable it must be.

Next I will develop in symbolic form a way for thinking about this. My discussion points toward Bayesian ways of considering evidence in science. By stepping back I will make out an analysis instead of Popper's idea of severe testing.

Let us consider the introduction of a new theory "T" that is to be tested in a way of which the following logical analysis is schematic. The introduction of theory "T" takes place against the background of older theories which it could well displace if it passes some appropriate severe tests. Denote as theory "B" some older or background theory, with respect to which "T" is a new rival. Let "E" be some test evidence. Let us suppose that from the point of view of the new theory "T", "P" is an exciting novel prediction; but from the point of view of the older theory "B", "P" is not even envisaged at all, or "P" is highly unlikely. Then since, with respect to the old theory "B", "T" "sticks its neck out" over "P", then "P" is said to be a severe test for "T". If we then check "P" against evidence "E", and "P" fits "E" very nicely (that is, "P" is true), then "P" is said to corroborate theory "T" rather than the older background theory "B" (Nola 2012b).

By adding further technical details to this account of Popper's theory of corroboration, we can bring out its relationship to Bayesianism. Let the expression 'prob(E, T)' stand for *the*

*probability of the evidence “E” given theory “T”*. This is sometimes understood as the expectedness, or the likelihood, of evidence “E” given theory “T”. It is quite distinct from  $\text{prob}(T, E)$ , which is the probability of theory “T” given evidence “E”. Popper defined the severity of a test by comparing the likelihoods of the evidence “E” given both the new and the older background theories, vis., “T”, and “B”:

That “E” is a severe test of “T” with respect to background theory “T”, or thus that  $S(E, T, B)$  holds, demands by definition that  $\text{prob}(E, T)$  is much greater than  $\text{prob}(E, B)$ .

The Bayesian explanation for this would be as follows. Let us take the case where from “T” (with any auxiliaries) we can deduce “E”; then  $\text{prob}(E, T) = 1$ , or is very high.

Now considering the background theory B and E, there are (as Nola 2012b points out) two cases:

(1) If on the one hand “E” is highly likely given “B”, i.e., either  $\text{prob}(E, B) = 1$  or at least  $\text{prob}(E, B)$  is very high, then the Bayesian probabilification of T given E is low. In Popperian terms, either  $S(E, T, B) = 0$  or at least  $S(E, T, B)$  is very low. In this case, “E” gives roughly the same degree of support to “T” as to “B” and is not well able to decide between them.

(2) If on the other hand “E” is quite unlikely given “B”, i.e. either  $\text{prob}(E, B) = 0$  or at least  $\text{prob}(E, B)$  is very low, then the Bayesian probabilification of T given E is high. In Popperian terms, either  $S(E, T, B) = 1$  or at least  $S(E, T, B)$  is very high. In this case, “E” gives quite different degrees of support to “T” and “B” and is well worthy of consideration to help decide between them.

Another way to express Popper’s idea of severity of testing would be in terms of a demand for ‘novelty’ of predictions. If a new theory implies some novel prediction that background theory could not have led one to expect (or even that background theory could have led one not to expect), then this prediction provides opportunity to test the theory severely (Nola 2012b).

Given the above quantitative notion of a severe test defined in terms of likelihoods, Popper is now in a position to define the notion of degree of corroboration. In its simplest form, this is done by saying: the degree of corroboration of “T” by “E” with respect to “B” is directly proportional to the severity of test of “T” by “E” with respect to “B”. However, it is also possible to introduce a “normalising factor” so that a measure of degree of corroboration can

be set up between -1 and +1. This is done in the following way, following a suggestion of Lakatos (1968: 415): The degree of corroboration of “T” by “E” with respect to background theory “B”,  $\text{Corr}(E, T, B) = \text{Defn} [\text{prob}(E, T) - \text{prob}(E, B)] / [\text{prob}(E, T) + \text{prob}(E, B)]$ .

To show how this definition works, let us simplify this so that we consider only three cases of degree of corroboration, -1, 0, and +1.

Case 1: if from the new theory “T”, evidence “E” can be deduced (with the help of auxiliaries), then,  $\text{prob}(E, T) = 1$ . The corroboration formula then simplifies to:  $\text{Crb}(E, T, B) = [1 - \text{prob}(E, B)] / [1 + \text{prob}(E, B)]$ .

Of this Case 1, there are then two sub-cases to consider:

Case 1(a): if the likelihood of “B” on “E” is high, i.e.,  $\text{prob}(E, B) \approx 1$ , then the degree of corroboration of “T” by “E” is zero (or nearly zero). (Consider what happens to the numerator of the equation.) In this case, since the likelihood for both “T” and “B” on E is high, then “E” gives little corroboration to “T.”

Case 1(b): if the likelihood of B on E is low, i.e.,  $\text{prob}(E, B) \approx 0$ , then the degree of corroboration of “T” by “E” is 1 (or nearly 1). (Again consider what happens to the numerator of the equation.) In this case, since the likelihood for both “T” and “B” on “E” is quite different, then “E” gives high corroboration to “T.”

Case 2: Suppose that “E” refutes “T” (with its auxiliaries). That is, from the new theory “T”, we cannot deduce evidence “E” but rather its negation “not-E.” Then  $\text{prob}(E, T) = 0$ . If we substitute this in the definition of  $\text{Crb}(E, T, B)$ , then the equation reduces to:  $[0 - \text{prob}(E, B)] / [0 - \text{prob}(E, B)]$ . Then, no matter how small  $\text{prob}(E, B)$  is, providing it is not zero, if “E” refutes “T”, then the corroboration that “E” gives “T” is -1. This aligns with our intuitions about the case where “E” refutes “T”. In this way, we have a measure for the degree of corroboration of “T” by “E” that ranges from the worst case of -1 to then best case of +1 (Nola 2012b).

Popper thought that any formal account of corroboration, such as that attempted, partly using Bayesian principles, above, could not capture all that he intended by the notion. In particular, Popper insisted that corroboration is only a guide to the way in which a theory has passed tests up to a given time. He did not think that it provided a guide to the future success of the theory. This reflects the consistency of his anti-inductivism where he assumed there to be no secure

inductive inference from past observation to future performance. I have stepped away from Popper to the extent of employing Bayesian principles. However, I do this precisely in order to make out clearly Popper's idea of a severe test. This idea clearly is key to Popper's critical rationalism. So, in one key way, even if ever so slightly, Popper's anti-inductivism needs to be relaxed. It is by making probable the improbable-seeming that a theory manages to be susceptible to a severe test; and it is when the theory passes such tests that it can be looked upon with favour. The idea that the theory's being looked upon with favour has nothing to do with what is probable cannot be right; we discover something to do with what is probable in what even brings about the favouring. Another way to consider this is as an instability in Popper's own anti-justificationism. Popper sought not any-old kind of favouring of a theory but rather a justified kind of favouring of a theory. Favouring a theory because it has passed many tests none of which is severe would be a mistaken kind of favouring in Popper's own view. Only favouring a theory because it has passed a good number of severe tests (and has not yet failed any tests) is justified, according to Popper. So Popper must to some extent have been oriented to justification. The account of Popper that we need is one that minimises the needed justificationism.

By turning from the positive idea of verification to the negative idea of criticism Popper believed he had turned his back on induction. He believed he had "solved" the "problem of induction" by providing a non-inductive account of corroboration. He believed that a story concerning science, an explanation of what keeps the theoretical activity in science honest to empirical considerations, can be told entirely in terms of hypothetico-deductive testing. To Popper, a hypothesis remains ever tentative no matter what tests it has passed: the next test could produce refuting evidence rather than corroborating evidence. I have preserved the spirit of this philosophy in the above analysis of severity of testing. But to do this I have relaxed a little, Popper's own official anti-justificationism.

Popper, rightly, and profoundly, is a fallibilist about science. Popper supported the hypothetico-deductivist idea, but he did not accept a theory of confirmation that commonly goes with it. Instead, he opted for corroboration. Popper was a hypothetico-deductivist with a difference: he wrapped into his hypothetico-deductivism the anti-inductivist understanding that "hypothetico-deductive confirmation" is a contradiction-in-terms. Consequently, he sought to do without any notion of "confirmation" of theories.

Well known criticisms have been made of Popper's methodology of scientific research. One may wonder if Popper can contend fully coherently that his position is anti-inductivist or anti-justificationist. Popper can almost have but cannot quite completely have his deductivist anti-justificationist critical rationalist 'solution' to 'the problem of induction'. However, what stops him quite having this solution is the need for evidence for a theory in order that there can be content to the very idea of a 'severe' test. The concept in Salmon (1967, 1989) of ampliative inference as well as the idea in Glymour of 'bootstrap' testing both directly challenge Popper's philosophy yet at a higher level they may instead flesh out Popper's philosophy in ways entirely helpful to it. They seem to suggest that Popper's telling perspective on falsification suffers some instability, but at a higher level they serve to underline its enduring strengths. Alternatively one can look to defend Popper by turning to Miller, Musgrave and others, have not been convinced by the criticisms of Popper themselves to give up critical rationalism. In the next two sections I consider in turn Salmon's and Glymour's apparently anti-Popperian methodological conceptions. But I shall also show the good work they do for Popper. Then I shall consider Miller's alternative more direct defence of critical rationalism.

### **Wesley Salmon's Concept of Ampliative Inference**

With the concept of ampliative inference, Salmon develops his case that induction cannot be by-passed in the actual testing of hypotheses. In the first instance, Salmon avers that there is no reason to find a deductive justification for induction "precisely because it is the function of deduction to prove the truth of conclusions, given true premises. Induction has a different function. An inductive inference with true premises establishes its conclusions as probable" (Salmon 1967: 38). To justify inductive inferences, according to Salmon, is not to establish them as true, but to establish them as probable. Thus Salmon is a fallibilist about science. But he insists that there is good content for the notion of evidence for a theory. It is only deductive inferences that can be rationally fully justified to have true conclusions; inductive inferences cannot be rationally fully justified, it rests more on probability.

Originally, Hume's contention is that just because, say, an event occurred sequentially in a certain way in the past, one may not justifiably say that it will continue to do so in the future (Hume 1902: 165). The problem of induction posed by Hume's argument ostensibly impugns the concept of evidence for just about any belief. Indeed if (as Popper insisted is the case) every belief reflects some theory, then Hume's argument ostensibly impugns the concept of evidence

for any belief whatsoever. This position of Hume's argument rests upon two premises: (1) Hume's inductive skepticism and (2) the justificationist principle that it is reasonable to believe only what you can justify. Popper's answer to Hume was critical rationalism, which accepts (1) but rejects (2). For Popper, there are no inductive inferences. Belief can come about only some other way, and the reasonableness of a belief must be evaluated in some other way than concerns how fully 'justified' the belief is.

Salmon opined that without an element of induction, Popper's method of seeking highly corroborated theories would not broadly be considered as a scientific process. Salmon did not aim to defeat Popper; rather to show that the scientific enterprise that Popper himself describes must involve inductive inferences not only deductive reasoning alone.

Salmon's disagreement with Popper targeted the non-inductivist notion of corroboration that Popper held. Salmon argued that human beings use evidence from experience to ground beliefs for things not yet observed. A scientific theory must necessarily have a warranted power of prediction in order to be able to have warranted implications for future experience. To Salmon, science requires predictions both for practical purposes and in order to test theories. Salmon's main argument against Popper is that his view is too intellectualist (Salmon 1967: 18) and cannot account for our practical reliance on theoretical judgments, for example to decide action in the face of life-or-death practical challenges such as in medicine. In Salmon's view, the Popperian claim that the best corroborated theory is to be preferred must be based on probability, otherwise the practical connection cannot obtain. In any case where one hypothesis has survived all tests to date, there is a variety of possible hypotheses which likewise have not yet been falsified. Then there seems to be no logical method of determining which is to be preferred. Practice will be frustrated, because there are too many hypotheses to choose from. This suggests that since Popper needs to make a selection from the number of unfalsified theories available to him, he faces a dilemma. Popper must first see that among the many hypotheses that can pass all the tests to date, one stands as tested more severely by those tests than any of the other hypotheses. Second, Popper must say that the most severely tested theory has the highest probability of being true. Otherwise, there is no good reason to choose it to base practical decisions on. Yet Popper in that case needs to make an essentially inductive claim, that since a theory has survived severe criticism in the past, it will be better able than its rivals to survive severe criticism in the future. Salmon insists that Popper cannot get away from

saying that corroboration is an indicator of future predictive success. Otherwise to use corroboration as selection principle for guiding practice makes no sense (Salmon 1967: 26).

My work in an earlier section to grow an appreciation for Popper's idea of corroboration from out of Bayesian inductivist ideas shows how I am in a position to accept Salmon's criticism of Popper, yet to rise with it to a higher plane of appreciation of Popper's critical rationalism. To accomplish this I accept that Popper's anti-justificationism is unstable, but I inject the least amount possible of justificationism into the needed rescue of critical rationalism.

### **Clark Glymour's Idea of Bootstrap**

Glymour formulated an overtly non-hypothetico-deductive notion of "bootstrap" inference. Yet Glymour represents "bootstrap" inference as providing an important severe kind of test. Glymour's bootstrap methodology is a formal characterisation of how a hypothesis is confirmed by a piece of evidence with respect to some background theory. So, unlike Popper, Glymour opens the door to the concept of evidence for a hypothesis. The bootstrap idea is that given background theory only a certain specific family of hypotheses may coherently be entertained. Yet a single element of empirical information may tell which member of this family alone agrees with the evidence. Then the evidence truly 'picks' one particular hypothesis from out of the family. Of course you also need the background theory that tells you what family of hypotheses it is appropriate to consider.

Glymour's point is that the background theory becomes better warranted by evidence the more rich and overconnected become the bootstraps that that background theory makes possible. A particular hypothesis may be 'picked' by evidence in more than one way. That is, we can 'bootstrap' infer the hypothesis in question not in one way only but in many empirically quite independent ways. Then it will seem to us (given the background theory) that the hypothesis in question has rich evidence for it. Our choosing it is "over-determined" by evidence, when by comparison hypothetico-deductive methodology suggests that our choosing a hypothesis must always be "under-determined" by evidence. (Another way to state the "problem of induction" is in terms of "under-determination of hypotheses by evidence".) Glymour argues that historically science has preferred the kind of background theory that allows rich "bootstrap" over-determination of hypotheses by evidence to happen.

This suggests a reason to call “bootstrap inference” a kind of “bootstrap testing”. Your background theory will be judged relatively to how well the “bootstrap inferences” work out and how richly they cohere. In a sense such “bootstrap testing” of the background theory is just a kind of severe testing of it. An example can show why this is so.

Whales are in evolutionary terms more closely related to pigs than to cows, and still more closely related to hippopotami than to pigs. Study of evolutionary shifts in fossil morphology shows this to be so. That is, you can use the background theory of evolution and specific evidence from fossils to deduce the conclusion in question. The neat thing is that the same conclusion follows from a completely different bootstrap. The examination of DNA can show that whales are more closely related to pigs than to cows, and still more closely related to hippopotami than to pigs. That is, you can use the background theory of evolution and specific evidence from DNA studies to deduce the conclusion in question. The two different deductions use completely different kinds of evidence but they line up with one another. And that helps explain why the theory of evolution has evidence going for it.

Of course, bootstrap-confirmed theories can be false, because bootstrap inferences depend on background assumptions that can be in error. Still, there are powerful reasons to think that a theory that is well bootstrap-confirmed is significantly onto the truth. At any rate, bootstrapping displays an ability to harmonise the evidence. Bootstrapping displays the quality of “consilience of inductions” as discussed by William Whewell (1840), and in Edward Wilson’s *Consilience* (1998). We could link to truth, if we can link truth with harmony or consilience.

With Popper we could instead step back in a different way from Glymour’s bootstrap methodology. We could remark that the expectation of consilience represents a very severe test of a theory. Should the fossil evidence really point to one and the same conclusion as the DNA evidence? Without the theory of evolution, there would be no good reason to say so. But, the theory of evolution helps to tell us that we should expect this. So, to expect bootstrap confirmation of a theory represents very severe testing of the theory.

### **David Miller’s Restatement and Defence of Critical Rationalism**

Miller’s book, *Critical Rationalism: A Restatement and Defence* (1994) expounded, defended and extended an approach to scientific knowledge identified with Popper. Miller’s central task was to combat misrepresentations of some of the logical and methodological problems of

Popper's critical rationalism, and to show that critical rationalism when properly understood is wholly defensible.

Miller does not allow any room for inductivism or for justificationism. In Miller's assertion, "for the problem of induction, widely regarded as the fundamental problem of the philosophy of science, brilliant solutions already exist" (Miller 1994: 14). He declared that "the problem of induction is solved much as Popper solved it" (Miller 2014: 3).

Miller took on the opponents of deductivism in science, particularly Salmon who felt that the principal line of criticism was to identify in scientific activity places where guesses have to be made, and to declare that these guesses were to be the conclusions of 'inductive inferences' (Miller 1994: 27). Miller disputed whether such ampliative (inductive) inferences play any role in science by simply re-rehearsing Hume's scepticism about induction. A valid argument is deductive in nature; the content of the claim is already contained within the premises of the argument. Therefore the claim is already presupposed by the premises, and is no more "supported" than are the assumptions upon which the claim rests (Miller 1994: 81). If an argument is otherwise, if it is ampliative, then it is invalid. There then is no logic for holding that its conclusion should be trusted to be true.

Miller's argument here is deductivist. His position rests primarily on the argument that since ampliative (that is, inductive) inferences are invalid, their conclusions are no better supported than unsupported guesses. He attacked the use of "good reasons" in general (including evidence supposed to support the excess content of a hypothesis). He argued that good reasons are neither attainable, nor even desirable. This is what Miller calls "tediously familiar". This is that all arguments purporting to give valid support for a claim are either circular or question-begging (Miller 1994: 107). This point is related to McGinn who held that "we have to be able to infer that if a falsifying result has been found in a given experiment it will be found in future experiments" (2002: 48). This is clearly an inductive inference. It is an old criticism, and others like it, were fully answered long ago by Popper 1972, Chapter 1 (Miller 2014: 4).

Miller further restated and addressed some other issues raised by opponents of deductivism, blind to the possibility of rationality without induction, who remark that 'it is a feature of Popper's philosophy ...[that] when the going gets tough, induction is quietly called upon to help out' (Bird 1998: 180). Miller insisted that just when Popper is getting the better of inductivists, they will insist upon some recourse to induction (or some similar procedure of

justification) by Popper, by which turning of the table they mean to dramatically expose Popper as a fraud (Miller 1994: 93). Emblematic of such inductivist accusation is what Salmon (1981) labelled the task of 'rational prediction'. Salmon's allegation was that despite the great success that deductivism can chalk up in the domain of speculative explanatory hypotheses, it is unable to make sense of the practical application of scientific results (Miller 1994: 106). All of these criticisms, Miller asserted, are mistaken. They are positions turned up-side-down that thereby conceal the real truth (Miller 2014: 3).

In a staunch defence of deductivism in science, Miller sought to set matters straight in a way that conforms entirely to the spirit of critical rationalism. Miller sharply reacted to the claim that empirical falsification is rarely encountered, or even impossible, particularly because falsifications of otherwise successful hypotheses are often little attended to, and on occasion more or less ignored, as evident in historical observations (Miller 2014: 5). A typical example is the inconsistency of Newtonian celestial gravitational mechanics with undisputed empirical reports of the perihelion of Mercury (Miller 2014: 5). Whether this constituted a refutation of Newton's theory historians in some ways dispute. Miller's reaction was that such a claim, popularised within the philosophy of science by Kuhn (1962) and Lakatos (1974), remained a question to ponder for a critical rationalist. He affirmed the fallibilism of critical rationalism in the spirit of Popper's philosophy. However, Miller argued that the critical rationalists' lack of a solution to this difficulty pales in significance with the lack by Salmon and others of any defensible understanding of what induction can possibly be. He also attacks as directionless ways to excuse this lack, those efforts to weaken what would be required in order for justificationism to hold, by investment in instrumentalism or even outright irrationalism (Miller 1994: 126).

Miller asserted that what Popper had in mind, no doubt, by falsification, was something comparative that admit of degrees. The thought was that a hypothesis that has failed some tests, but not failed them too badly, a hypothesis with some failed predictions definitely beyond the limits of experimental error, but not gravely wrong, will appear to be closer to the truth than a radically unsuccessful rival, even though both are falsified (Miller 2014: 8). Although the issue to be raised may be that these 'appearances' of closeness to the truth can only be conjectures, since we know at present so little about verisimilitude and closeness to truth, it still is not possible that such truth shall be under the total control of empirical evidence (Miller

2014: 9). It is not disputable that when considering the truth of the test statements involved, we may realise that a hypothesis has been falsified. We can therefore conclude that a hypothesis that has endured some regime of tests to which it has been submitted, and that has survived them, needs to be accorded a measure of corroboration (Miller 2014: 9).

Miller's tenacious conviction is that falsification defines the scope and practice of science. To him, Popper's well-articulated hypothetico-deductive methodology underlies the basis of every scientific hypothesis. I have myself parted company with Miller by embracing the idea that for Popper's critical rationalism to work there needs to be a "whiff" of inductivism in this position, or some purchase acknowledged for the justificationist idea of evidence for a theory. I believe that I sufficiently defend Popper by minimising the justificationism, or thus by keeping the inductivism as merely a "whiff". Maybe I am wrong and Miller is right. Either way there would be enduring significance for Popper's critical rationalism.

## **Conclusion**

Clearly, from the positivist's perspective on verification and their inductivist orientation, Popper developed some critical arguments which then led to him to assert that what truly matters is falsification. Both Salmon and Glymour reveal that there is some instability in Popper's position. However, Miller sharply restated and defended Popper's critical rationalism.

In spite of the grand-standings of either the opposition to or the defender of Popper's critical rationalism, the key ideas of this critical rationalism, the emphasis that Popper laid upon fallibilism and inter-subjective criticism, stand secure as analysis of how good science should proceed. In this chapter I have redressed in my own way the instability in Popper's philosophy that Salmon and Glymour claim that there is. I have nevertheless used their thinking to return attention onto strengths in Popper's philosophy. If Miller's defence of Popper is better than mine, so be it. Either way, there is reason to embrace critical rationalism.

By my repositioning the philosophy of critical rationalism in Popper so as to accept that well corroborated theories are also thereby confirmed, I also make clear that the testing of hypotheses and the legitimate processes of scientific inquiry can be conducted through a plurality of methods. This accounts for why Popper's critical rationalism has been known to embrace a plurality of ideas. As I shall argue in Chapter 3, Popper's critical rationalism can be said to embrace arguments for methodological and epistemic pluralism in science. Although

Popper considered rightly in my view that any scientific theory must be falsifiable, I argue that significant enrichment is possible of Popper's thinking concerning how severe tests are achieved. This plurality of process is nonetheless Popperian pluralism, for at an appropriately high level the processes all reflect the aim for severe testing. To emphasise the pluralism as Popperian is to reflect Popper's own stress on openness. The plurality of ways in Popper's critical rationalism does help science to promote openness to new ways and methods. Plurality of methods is the way not to stultify further research by narrow insistence that always and everywhere the process of science must be the same.

## Chapter Three: Unity of Method combined with Methodological Pluralism

*...I am going to propose a doctrine of the unity of method; that is to say, the view that all theoretical and general sciences use the same kind of method, whether they are natural or social sciences.*

*(Popper 1957: 130)*

### Introduction

The question whether there is a unified or universal method of science that cuts across every discipline of science is central to this chapter. Popper proposed that there is one method common to all theoretical sciences, natural and social. That is to say, he prescribed conjecture and refutation, or thus speculative effort to solve problems, followed by severe empirical testing, as the one way that science works in all its disciplinary manifestations. “[W]e are always concerned with explanations, predictions, and tests, and ... the method of testing hypotheses is always the same” (Popper 1957: 132). I argue that Popper is right, but that even so, Popper’s doctrine of unity of method does not truly closed the door on methodological pluralism. As I had begun to do already in Chapter 2, I will argue that critical rationalism gets support, and requires support, from a variety of methods that officially differ from Popper’s method, but that at a suitably high level of generality in fact collapse right back into critical rationalism.

That means that I will argue in this chapter that there is a balance in Popper not only (as I have argued previously) between individualism and communitarianism and between anti-justificationism and anti-revolutionism but also between the doctrine of the unity of method and openness to methodological variety, provided the various methods come together in the end as each its own kind of encouragement to there being severe testing of theories. Popper’s openness in this balanced sense of methodological variety is important to my argument on Popper’s communitarianism. The way that, say, Glymour’s ‘bootstrap test’ idea comes together with Popper’s philosophy is a model for repositioning Popper that I have discussed in the previous chapter. A very different philosophy from Popper’s can link to Popper’s philosophy, enhance Popper’s philosophy and be enhanced by Popper’s philosophy.

Of course Popper’s doctrine of unity of method is important for me in another way. Popper remarked that, we must proceed to test theories as severely and frequently as possible in order

to find fault with them if we can; in fact, we must try to falsify them. “Only if we can no longer falsify them in spite of our best efforts can we say that theories are corroborated, that is, they have stood up to severe tests. This is the method of falsification” (Popper 1957: 134). Similarly, Popper believed that falsification as “the” scientific method is also applicable to the social sciences. With falsification, conjecture and refutation, criticism becomes the special feature of an open society. Falsification is the best way for the open society to work. So for Popper, in the natural and social sciences as well as in politics, falsification is the basic unified methodology. In other words, Popper believed not only that the social sciences must work by conjecture and refutation, but also that social engineering must be done by a piecemeal, conjecture-and-refutation approach. Any other approach would be utopian and reckless. By advancing his doctrine of unity of method, Popper established one important bridge between his philosophy of science and his political philosophy. Similarly, in this chapter I bridge from Popper’s philosophy of science to his political philosophy. The political philosophy of Popper will be my chief concern in later chapters.

At a less concrete level, it may appear that Popper’s doctrine of the unity of method is committed to the idea of criticisability, testability, or falsifiability as the mark of a single rational inquiry. This might appear to be unitary. However, a more concrete analysis of Popper reveals that he allows that a great many different modes of inquiry might be appropriate to different domains of inquiry and each might allow for criticism or tests or falsification. Falsification, for Popper, can welcome plural modes of inquiry that makes possible rational criticism.

Popper’s notion of a unified method is a normative claim. In further support of Popper, I develop a descriptive analysis of arguments for pluralism about scientific method that draws support from more recent works in the philosophy of science. The pluralism that I defend rebuts such philosophers as the early logical empiricists, who contended or actually often simply assumed that there are universal procedures, laws or methods that are defining of science, and that consequently are applicable to all fields of scientific enquiry. What the positivists contended or assumed does not allow for the possibility that I explore here, that ‘science’ (or ‘scientific’) is a family-resemblance term in Wittgenstein’s sense, variously applicable to kinds of inquiry that share no one set of characteristics in common. Then I seek to show that, in their great variety, all scientific kinds of inquiry do support forcible criticism. They all support severe testing of theories, even if in them Popper’s hypothetico-deductive model of inquiry is

far from explicit. So I seek a balance between a pluralistic conception and use of Popper's own demarcation criterion. Helen Longino (1944- ) has defended the thesis of pluralism about Western science. In a way I agree with Longino (2000), even though I also use Popper's demarcation criterion to reveal a kind of higher unity. Stephen Kellert (2006) has argued a related thesis about epistemological pluralism. Kellert argues that epistemologies (in the plural) are "local" not only within cognitive geography at a time but also historically. Popper would not have endorsed the drift of this towards a kind of epistemological relativism. But Popper did himself emphasise that there is a socio-cultural character to the development of science. Popper would not have been surprised by the evidence of variety that leads Kellert to discuss "local" epistemologies. Again I think that a balance is to be struck, here. To some extent the methods of inquiry in science, and the views that its practitioners will adopt concerning their subject matter, in the questions that are asked and in the choices concerning what work will be carried out, are significantly a function of socio-cultural understanding that will be unique to a time and a place. Yet there is a need for these methods to support in some way forcible criticism or severe testing, or otherwise they are not scientific. I shall thus, in a balanced manner, argue against universalism in scientific method, or in other words marry Popper's doctrine of the unity of method with methodological pluralism.

The pluralism that I defend here is three-fold.

1. **Methodological Pluralism:** This is the descriptive position that multiple methodological approaches in scientific inquiry are legitimate and fundamental for science. I shall argue that by virtue of its specialisation into various sub-disciplines, each with a distinctive culture of its own, Western science, neither in its theoretical thinking, nor by extension in its methods, is at all a monolithic enterprise. I do acknowledge that in its interdisciplinarity science can often benefit from the act of "borrowing of knowledge from one field in order to assist the endeavours of another discipline" (Kellert 2006: 219). However, in spite of the tying-together that this creates, each field of science remains distinctive from others. This is the basis of the scientific pluralism that Kellert<sup>15</sup> and a number of more recent philosophers of science defend.

---

15 See Stephen H. Kellert (2006), Helen E. Longino (2002) and Kenneth Waters (eds) (2006).

2. Epistemic Pluralism: This is the position that different ‘local’ epistemological outlooks are legitimate and necessary for a full knowledge of the world. In a balanced way, I shall defend this pluralism up to a point, but also argue that polylogue becomes important, for example as a way to foster criticism. Adherents to different ways of knowing or thinking should seek to learn from one another, and should be able to be self-critical in the process. In particular, if we consider inquiry outside the ‘West’, there is a lot of difference that ‘Western’ inquirers should take interest in, with openness to self-criticism, just as there is a lot that those outside the ‘West’ learn from contact with ‘Western’ knowledge. The quotation marks around ‘West’ and ‘Western’ are needed because there is no such monolithic way of thinking: there is also pluralism within the ‘West’.
3. I shall conclude by arguing that there is no conflict between Popper’s critical rationalism and the argument which supports plural modes of inquiry. The thesis here supports two overlapping dimensions in Popper’s critical rationalism: (a) it encourages the existence of a plurality of ideas through mutual criticism with others; (b) it allows for plural modes of inquiries that welcomes possible rational criticism. In short, I defend a still further kind of balance in Popper’s philosophy.

## **Methodological Pluralism in Science**

The thesis that science is to become one unified entity theoretically, or alternatively, that there is a unity of method in science, is central to the argument for the unity of science or a unified method in science that some philosophers of science, such as the logical empiricists, defend. This is a normative argument for methodological unity and theoretical unity in science. One basis of this argument is that physics shows how science is done, and that ultimately the theories of all natural sciences are reducible to the theories of physics. This is reductionism in science, and the idea is that, because everything in the world is made of the same basic stuff in complex combinations, the laws of biology ought to be derivable from those of chemistry, and the laws of chemistry from the laws of physics (Ladyman 2002: 95).

The Logical Empiricists and subsequent philosophers of science during the twentieth century, would readily attest to the claim of unity of method or unity of science, or both. They assume that all the sciences share a common method. These scholars share the assumption that science as such follows one and the same universal method across all its sub-disciplines and through

the entire history of its development. The empiricists long assumed that there would be unity to science at least concerning its methods, if not also concerning its theories. They have held methods in scientific inquiry to be single and monolithic and that all scientific theories have been derived through these methods.

Popper's doctrine of the unity of method differs essentially from that of the empiricists. Popper held that even though falsification is a single specifiable system of method which holds of all the sciences it does not preclude modes of inquiry specific to a subject matter or a phase of development of a field provided that the mode of inquiry fosters the rational method, the method of criticism. The falsification criterion then applies, according to Popper, across a variety of modes of inquiry: it is ultimately the critical testing of theories or hypotheses that ensures that an inquiry is science (Popper 1974: 79). When Popper described science in terms of a critical rational structure which demarcates it from pseudo-science, his prescription was not narrowing, but rather was an open one. True, in order for any kinds of inquiry to escape the realm of pseudo-science, they must be open to rational criticism. Yet this very doctrine of method reiterates the connections between science and an 'open society', or between hypothetico-deductive processes and 'piecemeal social engineering' in Popper's critical rationalist philosophy. With Popper, therefore, "falsification is only a part of a much more general critical project" (Habermas 1976:214). We should expect that for Popper a variety of modes of inquiry are all able to stand as science, in all the various ways that those many modes of inquiry ultimately support critical testing of theories.

Popper also took a balanced view of the expectation of theoretical unity of science. A unifying theory would certainly be bold. That then recommends that scientists should try to unify science, since the bolder that a theory is, the easier it will be to test severely. However, criticism is needed of any step to unify science. So the struggle to unify science might not go smoothly or well. Science could find that they can more profitably be bold in more limited domains. Conjecture and refutation could for long periods make science, as a whole, ever less unified.

In short the emphasis on unity by logical empiricists seemed to Popper to be dogmatic. In support of Popper, I likewise use Popper's doctrine of the unity of method to rebuff the logical empiricists' position. I doubt whether at the level of abstraction away from specifics of theory and subject matter that we must operate at in order to do general philosophy of science, there really is much to remark about unity of theory that is common to all inquiries, and in all stages

of the development of those inquiries. Likewise I doubt whether there is any more to remark about unity of method, than that Popper settled upon within his doctrine of the unity of method that is open to variety of modes, with each mode consonant with Popper's leading demand for criticism or severe testing of theories. Like Popper, I do not need to take a stand on whether reductionism can succeed or must fail in science. The unity of theory can figure as an aim that it is appropriate to seek to progress towards only as much as general progress allows. Nancy Cartwright (1944- ) and John Dupré (1952- ) doubt the possibility of a unity of theory in science. Dupré claims that "science could never be a single, unified project" (Dupré 1993: 1). They may be right; the issue whether they are right, however, has no bearing on critical rationalism.

Feyerabend (1988) developed a kind of methodological anarchism about science. Even if this is in its bald form objectionable, Feyerabend's critique of methodological reductionism is perhaps ultimately compatible with Popper's view. That there exists no single scientific method we could agree to and still be critical rationalists, if we consider the pluralism to be about mode of inquiry, and critical rationalism to require merely that in some ultimate way the modes foster criticism or severe testing of theories. For Feyerabend, "the events, procedures and results that constitute the sciences have no common structure" (Feyerabend 1988: 1). This could be acknowledged as true up to a point, from the balanced perspective that I am defending.

Popper both spelled out a relatively simple, straightforward demarcation criterion for science and urged in a parallel way the requirement of openness. If there actually is any single self-consistent over-arching mode of inquiring scientifically, then you would expect not to have very complicated things to say about it. You would expect moreover that it would be open, to being embellished one way or another, by nuance that is different if the subject matter is different, or if the historical epoch is different, or if the cultural milieu is different, or if different personalities are at work. What I am calling Popper's "balanced" view of methodological unity is the only sensible view of methodological unity. You could not expect to be left with any great richness to describe if you have sought to say what holds of absolutely all of science, despite the patent variety in science.

However, Popper's normative claim about unified methodology in science provides strong heuristic guidance about what embellishments can work. What one might do in inquiry, as a means in the end to hold up one's theories to criticism depends on what would be specific to

this or that subject-matter. For example, one can not use litmus paper to test theories in sociology but one can use litmus paper to test some theories in chemistry. Of course the modes of inquiry of sociology and chemistry will differ in many ways. Yet it could be the one aim of being appropriately critical that could explain the differences in question. The claim that all science is critical also provides the standard of what can be termed scientific. When Popper in this way demarcated what is scientific from pseudo-science he did not negate openness but on the contrary helped define what he meant by that. There should then be variety in what counts as science, and ingenuity in the pursuit of criticism and growth of knowledge will generate this variety. Popper's only assumption is that falsification will always help to define what counts as scientific.

The general nature of such other claims about unified methodology in science, different from Popper, may be termed to be relevant when we highlight the simple traditional recipe in performing a scientific research. However, such other claims fail to address the peculiarities of the different fields of the sciences. This is because, in reality, scientists from the different fields of the sciences engage in many different activities with many different methods peculiar to their specialities.

The issue is whether progress towards the goal of science is regulated by a single self-consistent method, any more than achievement in science is bound up in a single self-consistent master or reducing theory. I doubt whether science can be made a unity theoretically, for instance, by reduction of every special science to one deep science. I furthermore doubt whether (except under the most general kind of description) there can be one method by which all of science can best work. In other words, there cannot be a unity of laws in science that explain the whole diversity of natural phenomena. Nor can there be one method that remains the same across all the various sub-disciplines of science across the whole history of their developments.

My position here is that it is erroneous to have a universalistic view of science when we consider the complexities inherent in the world. The explanations that these complexities require cannot suffice by a reductionist approach which explains all phenomena in terms of, for instance, the laws of physics<sup>16</sup>. Cartwright considers this reductionist view to be that physics

---

<sup>16</sup>Lee Smolin is baffled by the attention focused on string theory in physics which is claimed to be a unified theory in science. His conclusion is that the trend which supports one direction of research while other promising approaches are abandoned has tragic consequences as new discoveries in physics have allowed since the early 1980s (Smolin 2006).

needs “to be the governor of all matter”. Cartwright dismisses this view as quite wrong. She argues that theories achieve unification only when they are backed away from nitty-gritty truth (Cartwright 1999: 2-4). In other words, the laws of physics alone cannot give us the totality of the truth about the world and in fact are themselves false because they pretend that there is more unity than there is. The various sub-disciplines of science have a role to play in developing theories and methods of investigating the reality of the phenomena with which they are specifically concerned. Although the inter-disciplinary areas of science have shown that nature is relatively interwoven, this does not justify the call for a unity of science. The tendency to reduce science to a single approach, in most cases, physics, is to say rather more than that, for instance, the laws of thermodynamics are applicable to all the sciences. It is to say that all scientific explanation can be reduced to explanation in terms of physics. Such a claim is premature at best and at worst it is folly. Certainly Cartwright argues that it is folly. The other sciences concern phenomena far and away richer in their complexity than the science of physics can ever make clear. To say, for instance, that thermo-dynamical principles might constrain what it would be reasonable to think in another science, does not suggest that what it is reasonable to say in the other sciences would all reduce to or be explained by the laws of thermodynamics.

With the doctrine of the unity of method falsification also extends to non-Western modes of inquiry. The recognition that there exist varieties of inquiry beyond what has developed in the ‘West’ but still scientific is not contrary to Popper but on the contrary is what Popper should lead us to expect. Some unique way of carrying out research might nevertheless amount to a critical method. Then it would be science, even if it has until now been isolated from the ‘West’. Any such example underscores methodological pluralism as a feature of falsification.

### **Epistemic pluralism: The rationality question**

The implication that science constitutes the very standard of rationality accompanies most doctrines of the unity of method, particularly, the one held by Universalists such as the logical empiricists. Popper by contrast argued that non-scientific modes of reflection or thinking could be useful, partly by feeding ideas into the critical work of objective science. There is nothing wrong with some idea coming into science out of metaphysical, non-scientific thinking, provided that its use within the science sustains advancement that is rational through use of

criticism or testing. The logical empiricists claim that there is one single self-consistent variety of rationality the same everywhere and for all time, and that what it is for people to be rational in inquiry is simply to do science. Popper relaxed both these expectations in the direction of openness.

In Popper's paper 'Principle of Rationality' (or 'rationality principle'), a paper that he delivered as his Harvard Lecture of 1963, later published in his book *Myth of Framework* (1994), Popper held that rationality is not restricted to the realm of empirical or scientific theories, but that empirical criticism of the kind you get in science is merely a special case of the general method of criticism, the method of finding and eliminating contradictions in knowledge without ad hoc measures. According to this view, rational discussion about metaphysical ideas, about moral values and even about purposes is possible.

Popper's view on the rationality question about science epitomises openness. Epistemic pluralism epitomises openness. So it is natural to ask how attracted Popper was to epistemic pluralism. Popper implied that forms of concerted inquiry that are different from occidental science are not on that account alone necessarily irrational. He implied that polylogue could be useful to science. Through polylogue ideas could enter science that would usefully become part of its regime of severe testing and corroboration. The basis of Popper's assertion is that other forms of inquiry different from occidental science do not necessarily have to conform to some standard contemporary account of epistemic or scientific rationality. In Popper's view, to count something as rationally known is not to bless it as certain or justified, but is only to remark that by criticism some errors have been already eliminated from it, and that as the critical process continues it is so far doing okay. In Popper's words, "there are no such things as good positive reasons; nor do we need such things ... But [philosophers] obviously cannot quite bring [themselves] to believe that this is my opinion, let alone that it is right" (Popper 1994: 180).

Inferring from Popper's assertion therefore, we must consider both the normative and descriptive importance of a pluralistic way of knowing that takes into account both empirical and non-empirical approaches. Such consideration would rebuff the view which holds that there is a monolithic standard of rationality that can be read out of Western science only, or which sees rationality as a Western signature. Against such a view, I question here whether even within canonical science (occidental "science of the 'West'") there is anything like unity of method.

Looking more broadly at human inquiry, and choosing as examples some significant features of some other systematic indigenous knowledge, such as in Africa or in oriental cultures, I will argue here that inquiry that looks different again from this or that exemplary pocket of “Western science” can however be optimal in its social environment and for purposes that are rooted in the particular social environment. Whether the distinctive kind of inquiry, in Africa for instance, is science, is perhaps a less important question to ask than what polylogue would look like between its practitioners and the practitioners of “occidental science”. I will maintain that polylogue is needed, and that it would allow learning in all directions. What I advocate is the value of a possible polylogue involving learning by the West from African or oriental cultures, not only learning by African or oriental cultures from the West.

I perceive as obscuring the true nature of science the view that science depends upon a kind of rational method that an individual could deploy, and that all of science is unified around this fact. I am also concerned that the universality of what it is to do good science or the attempts at unifying the method of science may obscure the need to recognise that there exists other systematic indigenous approaches to knowledge that while they may not be burgeoning as to the same extent as that in the West, yet maintains significant indigenous methods of inquiry of their own. While these views were on the rationality of science orthodoxy in former decades, I am by no means alone now in my determination to jettison these standard views.

In this connection, whether there is a single self-consistent mode of Western rationality that could be globalised, that occidental science epitomises, and that occidental science vindicates because occidental science is especially rationally impressive, I deny, not by denying the impressiveness of science in the West, but by questioning both its ostensible unity, and its ostensible monopoly on rationality. However, I do not deny the tremendous importance of the category of rationality in science, and particularly in philosophical discourses. A denial of this would defeat the very purpose of this engagement in a philosophical activity.

However, in part, I subscribe to the position held by Wittgenstein and Peter Winch (1926-1997), both of whom have defended the relativity to cultures of rationality itself. This point of view is apt for searching into science and for appreciating its variety, as well as for looking beyond occidental science to cultures of inquiry in other places and times. In the *Philosophical Investigations*, Wittgenstein’s two major ideas (namely, language game and form of life) have relativistic implications. On the idea of language game, Wittgenstein posits that there are rules

that govern every language game and these rules also govern how language is used within it. Consequently, there are no general sets of rules or general language games. To Wittgenstein, the error we make is to think that we can establish a general sets of rules which would show us a true picture of the world. This kind of general perspective to the world, according to Wittgenstein, would distort our view of particulars (Wittgenstein 1953: 7). Similarly, Wittgenstein linked the measure of his idea of language game with the idea of forms of life. To him, language makes meaning within the context of its form of life. According to Wittgenstein, language games have ‘countless multiplicity’. Since language games have forms of life, and at the same time have ‘countless multiplicity’ then there must also be multiple different forms of life (Wittgenstein 1953: 217). This simply explains that the different forms of life have varied standards and as such the rationality of beliefs in each form of life is an issue of interest within each form of life, possibly in every culture<sup>17</sup>.

On his part, Winch says that Western scientific culture represents a standard of rationality that is just one among many, and in some cases members of different cultures with different standards of rationality could not possibly comprehend each other’s rationality criteria or their application. Winch’s claim is that Western scientific culture cannot be the ultimate paradigm upon which the yardstick of rationality is measured. While I agree, partly, with the positions of both Wittgenstein and Winch that Western scientific culture represents a standard of rationality among many standards, I think the absolute relativism that both contain is too strong. Instead I defend a position of pluralism which advocates a level of dialogue as a unity in the limit. I am particularly concerned about Winch’s extreme position as it relates to logic within the Azande’s cultural milieu. I agree that no culture has a monopoly of rationality but I do posit that logic as philosophers standardly understand that itself requires a level of literal mindedness that is not systematically met with in an oral, art-of-memory based culture like that of the Azande. Winch’s anthropological account fails to distinguish the question of “which logic” from the question whether the form of life is one in which “logic” is worthy in the first place as a concept for organising how one thinks about thought. I do not deny that variations of reasoning patterns occur within different cultures. My argument is that logic as an intellectual

---

<sup>17</sup> I am not unaware of the controversy that rages among scholars who differ on the relativistic nature of Wittgenstein’s philosophy. On my part, I subscribe to the position which sees Wittgenstein has being committed to strong relativistic views in much of his later works.

study is essentially the business of the literal minded philosopher or scholar and it should be recognized as such.

On the above showing, the strong relativism that both Wittgenstein and Winch express undermines the idea of unity-in-the-limit of what scientific knowledge comes to be known that constitutes the pluralism that both Charles Sanders Peirce (1839-1914) in Peirce (1868) and Feyerabend (1987) defended. With Peirce, scientific knowledge is socio-culturally and historically specific, but there is a quasi-stable arrangement for all knowledge to come together which signifies the idea of unity-in-the-limit; a view which allows one to expect that method will be different at different times and in different connections with different inquiries or different socio-cultural arrangements. This is a view which resonates with Feyerabend who averred that “any form of knowledge makes sense only within its own cultural context” (Feyerabend 1987: 102). This view queries the general assumption that only Western science holds the criteria for rational inquiry.

My defence of epistemic pluralism also exemplifies the social character of scientific knowledge that Longino emphasises in her attack upon the dichotomisation of the rational and the social. Longino asserts the thesis that scientific knowledge is both social and rational. She is however concerned about the dichotomy of the modalities of knowledge, each of which is differently understood by empirical researchers and the normative researchers. This dichotomy is based on the illusion that there are just two positions regarding scientific knowledge (rational and not social; social and not rational). To her, a realignment of these understandings would bring about a new set of interpretations involving interdependence of cognitive agency, plurality of content, and contextuality of productive practices (Longino 2002: 203-204)<sup>18</sup>. This aligns with my position on the worth of cross-cultural epistemic pluralism. It relates to how I will argue that knowledge that deals with fundamental reality in every socio-environment and how people of every socio-environment perceive this reality can be mutually harnessed through a polylogue process of interaction.

I acknowledge that the phenomenon of occidental science is unique in a certain way. It burgeons like inquiry nowhere else and at no other time. Somehow it is veritably explosively self-compounding and self-ramifying. That is a unique fact. Nevertheless, the development of knowledge across culture is, without doubt, indicative of the power of rationality that human

---

<sup>18</sup>For further reading on this see Helen E. Longino, *The Fate of knowledge*, chapters 1, 8, and 9.

societies are significantly built upon. The accomplishments that different cultures all over the world have attained in the thousands of years that people have lived in various societies only confirm that systematic indigenous knowledge is wrapped around rational inquiries about the natural world. The criteria for what passes as the standard of rational inquiry in occidental science cannot be used as a parameter of what can pass muster as knowledge in other cultures, as experiences, values, history and politics differ from one culture to the other. The values and potentials of systematic indigenous knowledge and its methodologies take into account local knowledge and practices of a particular environment and its people.

There is no gainsaying the fact that occidental science is built upon a formal, both empirical and conceptual, structure of knowledge that is instrumental to the study of the world within the confines of the Western perspective. Just as what Western scientists do is to understand how the world works, undoubtedly also, every well-functioning indigenous society must have its knowledge-production specialists, and must have created ways in which for the knowledge produced and held by these specialists to be made relevant to social decision-making. However, conditions may not obtain for the knowledge-making in indigenous societies to be theoretical. Indigenous knowledge is wrapped together with memory-art, oral culture. This means it is bound to possess greater spiritual dimensions not only empirical and conceptual elements. As memory art, such intellection may be oriented to the production and retention of “useful descriptive knowledge”<sup>19</sup>, and not fully oriented towards literal-minded explanation. It may take a mytho-poetic form, for that is a condition of its being memorable, by strictly oral means. This would make it become impressive in its extent and usefulness, but may nonetheless be limited in its extent by the limits of memory capacity (Catton 2010:39).

The form of mytho-poetic inquiry reflects its building and depending upon oral arts of memory. This form of inquiry may sidestep the explanatory function that is preeminent in Western science. Systematic explanation interferes with memory art functions that are key in an oral culture, and oral culture is misunderstood if it is understood to aim at systematic explanation (Catton 2009a: 36). Methodologically, mytho-poetic consciousness is both spiritual and mystical as a matter of course. However much more spiritual and less literal-minded it is,

---

<sup>19</sup> I am not implying that Western science is not concerned with this. There has been a very strong pragmatic theme on this. Francis Bacon and others were long ago looking for science to provide a sufficient understanding of nature to allow much greater human power and benefit etc. It was not just for knowing sake, as much as many scientists may claim this as their personal motivation.

mytho-poetic inquiry is not the complete antithesis of Western thinking. For example, in most non-Western traditions thinking resonates with the abstract idea of nous (which sees knowledge as the perception of the mental rather than the physical) that is associated with the mystic philosophy of Plotinus. In fact, it can be pointed out that mysticism or religiosity does not necessarily hinder the progress of knowledge, as Western societies were still largely religious while science progressed there<sup>20</sup>.

So, the embrace of the mytho-poetic mode of inquiry that is associated with some systematic indigenous knowledge of non-Western orientation is quite compatible with the claim that the spiritual is incidental to the physical. To the extent that they believe that the spiritual affects physical phenomena, other non-Western systematic indigenous inquirers may consider their ways of thinking at odds with the West's. But there are ways to understand the relationship that would argue instead for polylogue. The Logical Empiricists' verificationist theory and Popper's demarcation principle may not canonically apply to systematic indigenous knowledge of non-Western orientation. Some systematic indigenous modes of inquiry do consider as important phenomena that are not empirically verifiable. A good many metaphysical or psychological issues that Popper regards as pseudoscience do have relevance in the indigenous mode of inquiry, for instance, in African epistemology<sup>21</sup>. Yet none of this is reason to shun polylogue or to expect outright that polylogue can do no good.

In view of the above, what is favourably considered as a mode of inquiry in the African sense is not separated from the empirical, material, mechanical, psychological, art, supernatural, religious or the spiritual. This is why if we consider, for instance, the understandings that African intellections give concerning causal events then we would discover a difference in

---

<sup>20</sup> Religious belief was integral to the motivation of much of Western science. Scientists at some point were trying to understand the mechanisms by which God had constructed the world. The way that the religious motivation played out was tied to the earlier influence of the Greeks, with their literal minded pursuit of rational understanding. However, this claim does not preclude the fact that science was also at some point in conflict with religious views. The Copernican heliocentrism and with the Galileo affair against the geocentric model of the church is a case in point. Moreover, the relationship between science and religion since classical antiquity has been controversially characterized as either one of conflict or harmony. Nevertheless, a more qualified claim would affirm that despite these differences most scientific innovations before the Copernican revolution as a paradigm shift in the history of science were achieved by societies organized by religious traditions.

<sup>21</sup> A major source of reference regarding African epistemology is Leopold Senghor's conception of African mode of knowing. When faced with an object, Senghor says, the African becomes one with the object of knowledge. He feels with the object and establishes a relationship with it. The African mode of knowing is premised on 'we are, therefore I am'. See Senghor, Leopold. (1985). "On Negrohood: Psychology of the African Negro," Albert Mosley (ed) in African Philosophy: Selected Readings. Englewood Cliffs, N.J.: Prentice Hall.

approach from that of the West. The Western scientist is interested in explaining the empirical causation involved in event 'A' causing event 'B'. The specialist African knowledge inquirer is involved with what can be called 'agentive causation'. Typically, oral memory arts have as backbone a fabric of myths. Myths are narratives, involving agents. Agentive causation is what makes for narrative. The knowledge for which mnemonics arts are provided via or within the myths picks up, as part, the myths' own attribution of causal agency to its protagonists. The rainbow is defined as God's covenant for example, or as offspring to wonder and mother of love. This is agentive causality: the kind that can figure in stories, with agents, most of them human or humanlike, e.g. ancestors or gods.

In general, the point about unity of method is that it is quite possible to defend the rationality of science without being committed to reductionism about one single self-consistent way of doing science, or the invalidity of other forms of inquiry outside of occidental science. The point about different ways of knowing or what other methods of knowledge exist apart from scientific knowledge is to re-emphasise the need to recognise that not all knowledge is derived through empirical procedures. Even though the methods of science accounts for solvable problems that have empirical solutions based on observable events other forms of inquiry, such as mytho-poetic or the agentive causation mode of inquiry may be said to attain a proper knowledge status by 'tenacity'<sup>22</sup>. By tenacity, the process of accreditation for other forms of inquiry can be that they have continued over the years to serve a societal function, even surviving all urges to modify practical bearings or intellectual starting points. They may to that extent have survived a kind of critical testing over the years. Accordingly, presumed knowledge will be held firmly on as the truth because for so long it has been remarked as known to be true. Frequent repetition of such presumed knowledge within an oral tradition not only seems to enhance its validity but also orchestrates for it a kind of 'test of time'.

### **Popper's Pluralistic Methodology**

The philosophy of critical rationalism that informs both Popper's philosophy of science and political philosophy emphasises the need to engage in critical discussion, to be prepared to listen to criticism, to be able to accept criticism, to practice self-criticism, and to engage in

---

<sup>22</sup> Please see Charles Sanders Peirce, *The Fixation of Belief* (1877) in his discussions of rival forms of inquiry.

mutual criticism with others. The attitude of engaging in criticism with others encourages openness and acceptance of a plurality of ideas for the progress of knowledge. Such a fruitful attitude of pluralism aligns consistently with the notion of falsification in Popper that underlies his doctrine of unified methodological procedure which ostensibly embraces different forms of inquiry that can inculcate rational criticism.

The existence of plural ideas through mutual criticism with others is an essential ingredient of Popper's critical rationalism. It is what ensures that the objective of criticism in Popper retains the values of pluralism that critical rationalism entails. This theme is suggested in the remarks credited to Feyerabend that "Popper's falsificationism cannot exist without pluralism; and pluralism, as the guarantee of criticism and falsifiability, has consequences wholly in agreement with Popper" (Farrell 2000: 260).

The goal that pluralism is intended to achieve in scientific theory and methodology is to rebuff the assumption of the Universalists who hold the view that scientific practice and scope can be monolithic and reductionistic. Popper's falsificationist methodology is anti-universalism because universalism cannot be reconciled with the pluralistic methodology that underlies Popper's critical rationalism. Popper urges us to be critical. In order to be critical, we must question the prevailing scientific or political approaches to problem solving. Open and critical discussion is essential to the way knowledge progresses in science and political society. In engaging in critical discussions, different approaches to problem solving may be entertained. A plurality of ideas emerges in the process of problem solving. Potential solutions to problems in science are debated within the scientific community. Critical rationalism therefore has a vital social element.

The pluralism which entails Popper's critical rationalism in science also has implications for discussions of liberal politics in Popper's political philosophy. The engagement in mutual criticism with others and the effects of such a critical attitude on the organising of political society is suggestive of the significant aspects of the individual and the social in Popper's critical rationalism in politics. I will discuss the element of Popper's philosophy in greater depth in later chapters. However, the implications of mutual engagement and mutual criticisms that critical rationalism entails encourages the recognition of pluralism and the possibility of a polylogue for mutual benefits and variations of learning.

## **Value of cross-cultural polylogue: The argument**

The focus here is to establish that there is a broad spectrum of epistemological approaches to the study of nature that are not limited only to that of occidental science. One main feature of occidental science is the ways it focuses commitment to reason and ardent literal-mindedness. Of course, this is its greatest strength rather than a weakness. However, this focus is unaffordable to a people that uses oral means or unaided mental ability to retain their knowledge. These people are not liable to produce burgeoning explanatory knowledge at the explosive pace of scientific knowledge development in the West. However, in a relative degree, each has attained some level of success and failure with respect to a desideratum that the other holds dear and needs to hold dear. This is why I defend the thesis of the value of cross-cultural polylogue. Polylogue is needed among specialists, scientists and even philosophers of different systematic indigenous knowledge types in order not only to learn about the variety of thought amongst different cultures but also to learn better about the world.

My argument is that each tradition will become aware of the need to revise some of its former thinking, by virtue of what is learnt through polylogue, and in particular, by virtue of new criticism realised through polylogue. There may be certain preconditions and limitations to be considered, as well as expectable results of such a polylogue. What is impressive is that the distinctiveness in each tradition would enhance polylogue among them. The knowledge that can be gained in occidental science, for instance, stands to inform those other systematic kinds of inquiry in new ways, just as the desired polylogue could inform occidental science in new ways.

## **Conclusion**

To ask whether a cross-cultural polylogue in science as well as in knowledge in general is possible is to beg the question. The evidence of divergent cultural traditions and what is distinctive in each can be used to establish the thesis of pluralism in terms of different kinds of inquiry. A kind of inquiry which aims to provide answers that are intended to be universally true may ostensibly undermine the linguistic and conceptual tools that are also valuable in other traditions and cultures. This same concern is also relevant to the different fields of inquiry within canonical science such that the methods of inquiry in all the fields of specialisation cannot be single and monolithic. Rather, methodological pluralism can allow for the sustainability and uniqueness of each field that contributes to the progression of knowledge.

The value of cross-cultural polylogue among all traditions, and the possibility and necessity of epistemic pluralism as an essential ingredient to the growth of knowledge resonate with the spirit of open and critical discussion that Popper's critical rationalism prescribes. The attitude of mutual criticism inherent to critical rationalism is consistent with both ideas of methodological pluralism and epistemic pluralism. Both types of pluralism are aimed at ensuring that issues and questions concerning reality, man and the universe are not understood by a singular and universal method of inquiry or only under the purview of a particular systematic indigenous knowledge, say, Euro-centrism, for instance. This presupposes that many other methods can be used to gain understanding of how knowledge can be applied to different fields of inquiry or how different systematic indigenous forms of inquiry can have their diverse understandings of the subject matter. In this case, cross-cultural polylogue ensures that a mutual bilateral understanding can achieve the possibility of learning on all sides.

In many ways for Popper, his philosophy of critical rationalism in science entails a pluralistic element that interacts consistently with the doctrine of the unity of method that he also espoused. This is in spite of the fact that the falsification that Popper defended as a methodology in science has deficiencies now well recognised by philosophers of science. These strengths and weaknesses of falsification as a concept and other aspects of Popper's philosophy of science have been addressed in chapter two.

In spite of the concerns that I have raised about the structure, content and direction of Popper's philosophy of critical rationalism in science, particularly in Chapter 2, such concerns do not affect my enthusiasm about the philosophical importance and practical relevance of his philosophy of critical rationalism in politics. Although Popper used the idea of criticism as a basis for understanding the method of falsification in his philosophy of science, he also used criticism as the basis for the development of his liberal idea of politics. Despite the acknowledged weaknesses of some contents in his science, the attitude of openness, individual freedom, piecemeal reforms, mutual dignity and respect to others which form the social character of his politics, all have implications for how problems of contemporary politics are addressed. The critique of historicism and holism that Popper made, his ideas of individual freedom and piecemeal social engineering to social reconstruction of society emphasise the relevant features of his political thought. The value of his piecemeal reform is to mitigate the evils of large-scale or wholesale change of society. The philosophical relevance of these features in Popper's political philosophy that I shall address in subsequent chapters motivate

my continued drawing from Popper in spite of the weaknesses that I have emphasised in some aspects of his philosophy of science. Despite the critical method that mutually links his science and politics together the acknowledged problems in Popper's philosophy of science do not cancel out the philosophical importance of his political philosophy.

In this respect, the proceeding chapters shall examine the development of Popper's political philosophy, particularly as it emerged from his criticism of Marx's scientific interpretation of history. This criticism began Popper's engagement with the social sciences, and particularly into political philosophy. Using the falsification methodology central to his critical rationalism in science Popper aimed to establish falsification as the methodology in the social sciences for his idea of a science of society.

## Chapter Four: Popper on Science of Society— A Refutation of Historicism

*In memory of the countless men and women of all creeds or nations or races who fell victim to the fascist and communist belief in Inexorable Laws of Historical Destiny.*

*(Popper 1957: “Dedication note” prefacing the book)*

*We may become the makers of our fate when we have ceased to pose as its prophets.*

*(Popper: 1945a: 3)*

### Introduction

In chapters 2 and 3, I discussed how Popper made falsificationism and rational criticism the underlying basis of his philosophy. This same philosophy of science ideal of falsificationism and criticism Popper imported wholesale not only to the social sciences but also to his own general way of modelling how society can best work. Popper used his method of falsificationism, conjecture and refutation as a basis for the doctrine of the unity of method in natural as well as social sciences. With falsificationism, Popper believed he illuminated “the method of science”. Equally, he believed that falsificationism illuminated the best theoretical model for a society to work.

In chapters one to three I have shown that Popper’s philosophy of science becomes fully intelligible only if it is understood to incorporate balance of several distinct but interdependent kinds. I have discussed the balancing that Popper did between individualism and communitarianism, between anti-justificationism (fallibilism) and anti-revolutionary views, and between unity of method and openness among other things to variety of modes of inquiry. Underlying the philosophy of Popper’s critical rationalism, both in its bearing upon philosophy of science, and in its bearing upon political philosophy, are the themes of falsificationism, fallibilism and inter-subjective criticism, that Popper used to exquisitely achieve a balance between the individual and social aspects of his philosophy. In this chapter I shall particularly re-emphasise the balance in Popper between individual and social aspects.

I proceed in the conviction that Popper roundly established falsificationism as a legitimate methodology of science. My purpose in this chapter is not again to demonstrate this point of view, for then this thesis would principally be a contribution to philosophy of science.

However, I have already made a case for the positive evaluation of Popper's philosophy of science. I have shown how some outstanding seeming alternatives to Popper's hypothetico-deductivist, falsificationist philosophy of science collapse back into falsificationism when viewed from a sufficiently high vantage point. Falsificationism unifies all methods of science, Popper argued, and I have agreed with him about this. Popper at times allows it to appear that this single unifying methodology could potentially be wielded by an individual researcher. However, Popper himself laid great emphasis upon inter-subjective criticism. Popper allows us to see that there is a plurality of modes of inquiry that count as scientific because they all meet in their own way the rational standard of falsification. This pluralism heightens the social character of Popper's falsificationism. The inter-subjective element in his critical rationalism establishes the dependency of science upon community as it focuses on individual critical rational criticism, and on the engagement of the individual with others all in mutual (inter-subjective) criticism.

So, as regards the social sciences, with his method of falsification Popper advocated a theory of rationality that embodies openness of society. His "social ethic consists of the commendation of openness, which is the social equivalent of falsifiability—the holding of social principles without rigidity, in a spirit which is willing to learn, innovate, experiment and change" (Gellner 1974: 172). This open society, however, consists of what Anthony O'Hear calls the idea of the unity of mankind. It is the idea that "in the open society anyone may criticise and contribute, regardless of origin, race, religion, class or gender" (O'Hear 2009:206). Popper's contention was that the critical method which was typical in science can be generalised into the 'critical and rational attitude' as a basic feature of the open society (Popper 1974: 132).

The general themes of fallibility, openness and inter-subjective criticism which Popper exposed in his view of natural science matter specifically to his view of the social sciences, particularly his account of politics. In politics, a Popperian liberal-communitarian philosophy is constituted by both individual and social aspects. The liberal tendency in Popper is balanced by his regard for the necessity for social interaction and interrelationship, and thus by a communitarian tendency.

Granting that Popper applied the same method in both science and society one needs to focus an analysis on the question of whether Popper's critical method with its orientation to intellectual openness in science truly is apposite to his defence of political liberal-

communitarianism, and if it is, then on how good are these political philosophical understandings to which it directs us. What this analysis exhumes are the moral and political values that Popper's political agenda embraces - political values of intellectual openness, political freedom, welfarism, critical debate, feedback from citizens, and social interaction and interrelationship. In Popper's thinking, these values are all analogous to valuing the growth of knowledge, and thus to valuing problem-solving by conjecture and refutation in science. That is to say, Popper recognised and lauded both the growth of knowledge and problem-solving by conjecture and refutation in wider society not only in science. So, for Popper, in politics as well as in science, the schema of problem-solving ultimately "consists in trying out tentative solutions to those problems from which our investigations start" (Popper 1992: 66).

When Popper applied his understanding of science to politics, his agenda for the social sciences was to establish a science of society using the methodology entrenched in his critical rationalism. Yet a science of society would not in all ways resemble a science of physical nature, for society would evolve partly by its knowledge evolving, and there cannot be laws that would fate how knowledge will evolve. With critical rationalism about physical science, Popper emphasised bold conjecture of general laws, followed by attempts at empirical falsification. Yet even about physics Popper argued that determinism breaks down: he considered that the future is open (Popper 1982: 185). Synoptic understanding of how change will happen in the world is not fully possible even in physics. In politics, Popper emphasised openness of society. Synoptic understanding of how change will happen in society is definitely not possible, because society evolves partly by its knowledge evolving, and there cannot be laws that would fate how knowledge will evolve. These two related applications of Popper's philosophy are combined within his criticisms of Marx's<sup>23</sup> ostensibly scientific, materialist interpretation of history.

Popper's background as a philosopher of science focuses his criticisms of pseudo-scientific theories of society. As a philosopher of science Popper perceived as suspect the claims by various scholars in the social sciences such as Marx who wrongfully assumed that they could predict and interpret social phenomena scientifically. Marxism, in particular, claimed to be a

---

23 A comprehensive examination of Popper's criticisms of Karl Marx will occupy discussions in the next chapter. It is important to emphasize that Popper's idea of liberal politics developed from his criticisms of Marx's theory of historical materialism. A discussion of Popper's critique of Marx's scientific historical method can be found in the *Open Society and Its Enemies*, and *The Poverty of Historicism*.

scientific theory of historical and social development. It also claimed for historicist social science the same objectivity as that in natural science. Popper regarded this pretension as the claims of pseudoscience. He criticised Marxism for incorporating a historicist method of prediction, a method that was believed by Marxists to function with predictive power over the future course of human history. Popper maintained that the historicist method in Marxist or other guises has exerted a profound and problematic influence on society, helping to explain the rise of totalitarian regimes. This is ironic in the case of Marxism given the claim that Marxism is to be emancipatory. Historicism is a poor method, Popper remarked, and is also dangerous to society. In establishing a science of society, Popper's preoccupation was to reveal the essential danger in historicist ideology and to show the inadequacy in the historicist's method in the social sciences.

Popper's science of society presents itself as a criticism of historicism. His criticism of historicism leads to his development of piecemeal social engineering as solution to the historicists' holistic ideologies and tendency to help precipitate totalitarianism. Popper's *The Open Society and Its Enemies* and *The Poverty of Historicism* elaborate on the exquisite benefits of piecemeal social engineering. Piecemeal social engineering requires that proffered solutions to problems within the human society will be dealt with in bits-and-pieces, always with a sense of fallibility and a willingness to reconsider, in order to negate the heady holists' tendency to precipitate sweeping negative consequences that are unintended even by them. Fundamentally, these two books by Popper serve as Popper's "defence of freedom against totalitarian and authoritarian ideas, and as a warning against the dangers of historicist superstitions" (Popper 1974: 131). Popper identifies those who are enemies of individual freedom and the open society as all champions of historicism, who reduce the task of social sciences to prophesying the events of social development. Popper argued against the dangers of historicism and offered an argument for the 'rational unity of mankind' where criticism and intellectual openness are valuable for human freedom in the open society. In Popper's view, the only kind of political arrangement that can ensure freedom is the open society, just as the only way to secure security itself is first to secure freedom.

In consideration of the above, it is pertinent to present, in this chapter, a critical exposition of some of Popper's themes in the philosophy of politics without distorting or understating his salient points. I begin my exposition and critical analysis of Popper's philosophy of politics from the standpoint of his anti-historicism since all salient themes from his political philosophy

stem from his anti-historicism. I outline many of the themes and terms in Popper's philosophy of politics that will be used in subsequent chapters.

## Essential Themes of Popper's Philosophy of Politics

**The Open Society:** This is:

*A concept articulated and championed by the philosopher Karl Popper and intended to denote a society characterised both by open, rational debate and also on that account by its evolving along an unpredictable trajectory. Popper argued the following. The growth of knowledge is inherently unpredictable. Yet the character of a society will depend on the knowledge that the society has acquired. Thus for a society to have a predictable pattern of evolution or be static it must be intellectually stagnated. "Tribal" societies approximate this condition. Within societies marked by rational debate, intellectual progress, and therewith unpredictable social change, some may hanker after a return to stasis. Such are (perhaps unwitting) enemies of the open society. Their tendency of mind represents "tribalism". One signature of tribalism is collectivism, the doctrine that each individual's essence or good is defined by the social collective as a whole. Like the (related) conception that society is an organism, collectivism is apt only of "tribal" societies, and not apt of an open society. Notably, collectivist thinkers such as Plato and Marx hold that an ideal society would not be subject to change. Their ambitions for social reform are "utopian". To embrace by contrast the ideal that society should be open is incompatible with utopianism. In an open society the appropriate way forward is by "piecemeal engineering". The goal, over against J. S. Mill with his doctrine of utilitarianism, is not to maximise happiness, so much as it is to ameliorate, by trial-and-error limited reforms, the conditions all rational people agree are harmful. This is "negative utilitarianism", and represents a middle path between moral dogmatism and moral scepticism or nihilism. It avoids any pretence that there are truly general laws of society or of history, for there are none (Catton 2006: 408).*

From the above succinct description of Popper's conception of open society, it is clear that the open society encapsulates his philosophy of politics. However, the underlying basis for endorsing an open society stemmed from his criticism of historicism. Among critics of historicism Popper's criticism is remarkable. The way that he criticised historical determinism in Plato's republicanism, in G.W.F Hegel's (1770-1831) philosophy of history, and in Marx's historical materialism is important to the overall development of liberal thought. Those criticisms contributed to the development of his essential themes on piecemeal social engineering, individual freedom, government interventionism and negative utilitarianism. The themes are recognised as central ideas of Popper's liberalism.

At its basis, *The Poverty of Historicism* is a theoretical application of scientific method in politics, but at the same time, it is also an elaborate criticism of all beliefs in inexorable laws of history, laws of social development, or laws of human destiny. His other book on political philosophy, *The Open Society and Its Enemies*, is focused simply as an attack in the strongest terms on the ideologies of Plato, Hegel and Marx; those figures he termed “enemies of the open society”. Popper’s most stringent criticism falls on Marxism which he regarded as “the purest, the most developed, and the most dangerous form of historicism” (Popper 1945b: 2).

The term ‘historicism’ connotes what Popper regarded as belief in inexorable laws of historical destiny, that is, ostensible laws of historical or social change. Historicism is in Popper’s view the intellectual origin of fascism and communism. Popper, like many political philosophers, was concerned with how a society ought to be organised, as well as with identifying a suitable method for social reform. The principal task in social reform, according to Popper, is to design social institutions, and to proceed, always with an understanding of their possible imperfection, with those already in existence (Popper 1957: 65). In redesigning and reconstructing social institutions, Popper proposed a functional method of small adjustments and re-adjustments always on the look-out for reverse or unintended effects. In order to achieve optimal social reform one cannot be utopian in Popper’s view. Utopia is a will-o’-the-wisp; and to target utopia is pathological. With arguments that significantly overlap those of the eighteenth-century Irish political writer Edmund Burke (1729-1797), who became an anti-revolutionary and is studied for his anti-revolutionary views, Popper condemned the method of redesigning society as a whole. That is, Popper rejected large-scale social reform, which often arises out of the claim that knowledge of the future course of history is possible.

Popper was appalled by the confidence often displayed by social scientists thinking it was within their capacity to predict the future course of human history. Such confidence arises out of the presupposition that because of the successes that natural science has recorded in the predictions of observable phenomena in the world, the social scientist too can reasonably deduce knowledge of the laws of history or sociology (assuming that such laws exist) that will lead to the successful prediction of sweeping future events or predictions about particular social and political developments. Marx is one of those scholars who Popper said had sought to use a scientific method of prediction as a definite programme for discerning and implementing laws of historical and social change. Given the liberal ideas that Popper defended, in terms of individual rights and individual self-determination, Popper was averse to notions of historical

prediction aimed at directing conscious efforts at socio-economic and political change. Such notions that societal change was determined by inexorable laws of history defeated the purpose of individual rational self-determination since social events were said to be predetermined. So what Popper attacked in historicism was the claim of its adherents that there were laws of history or laws of social development, valid for all historical periods, which determined future social events.

More often than not when scholars try to address issues of intellectual concern, they ultimately apply a mode of thinking that is specific to a particular context. Such is the concept of historicism that Popper used to denigrate the socio-political theories of Plato, Hegel and Marx. Fundamentally, the term 'historicism' has no singular definition. There are divergent interpretations of it. However, it can be broadly seen as a theory that emphasises that events are influenced by conditions of history. Popper's usage of the term is similar to the broad perspective of it. His interpretation of the term aligns with many other views which see historicism as the belief that natural laws govern historical events which in turn determine social and cultural phenomena<sup>24</sup>. In spite of his conception aligning with many other interpretations, there are some concerns to be raised with regards to Popper's usage of the concept 'historicism' in *The Poverty of Historicism*.

A first problem relates to how Popper made the term 'historicism' cover an unwieldy scope. Popper distinguished between anti-naturalistic doctrines of historicism and pro-naturalistic doctrines of historicism: the former is the view that methods of natural science (physics<sup>25</sup> in particular) cannot be used in the social sciences, while the latter is the view that methods of physics can be used in the social sciences. In spite of this distinction, it is sometimes unclear what position Popper held within the conceptual clarification. He attributed historicism to both doctrines of (A) anti-naturalism and (B) pro-naturalism. One is hardly able to correctly follow his critical objections to historicists' notions of either position A or position B. This is because Popper did not distinguish the description of these positions (A) from (B), their criticisms, and

---

24 For views similar to Popper on historicism see Dagobert Runes (ed.). *Dictionary of Philosophy*. Totowa, NJ: Littlefield, Adams and Company. 1962., and Leo Strauss. *Natural Right and History*. Chicago: University of Chicago Press. 1953.

25 It is worthy of note that Popper differs essentially from the explanations that require a reductionist approach which explains all phenomena in terms of, for instance, the laws of physics. Popper repudiated physicalism- the doctrine that the mind was just a physical entity. As such, mental phenomena would not be explained by the laws of physics. See chapter three of this thesis for further discussion on reductionism in science.

the description of his own position (Keuth 2005: 197). In this way, a certain level of confusion arises as he sometimes wrote as if he had overthrown position (A) when in fact his argument was only directed against position (B), which although occasionally associated with position A by no means entails it (Passmore 1975:31). Even in the face of this broad scope, Popper also seems unable to account for why some anti-naturalists might also hold the view that the knowledge of prediction in natural science can be used at least to some degree to improve knowledge of social and political developments.

The four sections with which *The Poverty of Historicism* is structured appear at first glance to have a harmonious relation to one another. Let us consider how the sections are outlined: (section I) the anti-naturalistic doctrines of historicism, (section II) the pro-naturalistic doctrines of historicism, (section III) criticism of the anti-naturalistic doctrines, and (section IV) criticism of the pro-naturalistic doctrines. However, a detailed look at the chapters contained in each section reveals an unmatched organisational structure<sup>26</sup>. Section III is meant to critique section I, and section IV is supposed to critique section II. What happens in reality is that there are a number of unmatched chapters in section III in relation to section I, and in section IV in relation to section II; which makes the book relatively non-symmetrical. In addition, some chapters in section III have no relation to section I, and some chapters in section IV have no relations to section II. As a result, this accounts for the impediment to clearly identifying Popper's view of the difference between the methods of the natural and the social sciences. Ian Jarvie (1937- ) in Jarvie (1982) in his paper, "Popper on the difference between the Natural and the Social Sciences" similarly argues that this impediment is partially due to the organisational structure of *The Poverty of Historicism* (Jarvie 1982: 84).

Despite these considerations, it is important to keep in mind that it is the same truculent anti-authoritarianism which Popper brought with him into the field of philosophy of science which he then replicated in his political philosophy. This accounts for why the development of his political philosophy branched out primarily from his refutation of historicism. In attacking historicism, Popper attacked totalitarianism. He saw historicism as a justification for the implementation of a large-scale social reform since it is deemed possible to foretell the future "course of economic and power- political development and especially of revolutions" (Popper

---

26 The book is rather messily put together as Popper later admitted when he said it was his first attempt at a composition in English and was not successful. See Popper's Unended Quest, p.130

1945b:79). Social reform, Popper remarked, must be piecemeal in order to ameliorate human suffering. He preferred that urgent evils of society be dealt with in a bits-and-pieces approach with a view to best learning from one's mistakes. This explanation culminates in the four essential concepts that I shall undertake to examine in the following sections below. These concepts include: historicism, holism, social engineering (piecemeal vs. Utopian), and negative utilitarianism. They all play major parts in the central thesis on the development of Popper's liberalism that I shall discuss in the next chapter.

## **Popper's Refutation of Historicism**

"Historicism" Popper defined as "an approach to the social sciences which assumes that historical prediction is their principal aim and which assumes this aim is attainable by discovering the 'rhythms' or the 'patterns', the 'laws' or the 'trends' that underlie the evolution of history" (Popper 1957:4). This is a compact definition, as there are a number of related issues clustered together. John Passmore (1914-2004) identified four of these issues, namely: (1) an approach to the social sciences, (2) assumes that their aim is historical prediction, (3) assumes that such predictions are based on the discovery of "rhythms" or "patterns," of "laws" or "trends," (4) assumes that these laws or rhythms underlie something describable as "the evolution of history" (Passmore 1975:33). The analysis of this definition succinctly captures the refutation of historicism that Popper summarised in the Preface to *The Poverty of Historicism* as he was unwavering in his attack on historicist ideologies.

The outstanding issue in Passmore's analysis of Popper's definition of historicism can be found in statement (2). Popper himself regarded this as the most decisive; as it fundamentally addresses the central concern of the refutation of historicism. It is clear that what Popper was concerned with is the issue of historical prediction as a principal aim of the social sciences. He granted that, for instance, economic theories are capable of a certain level of prediction. Thus, all things being equal and under certain circumstances, then particular conditions of development may be achieved. At least, some level of social prediction would be possible in economic theories if Popper is to use his falsificationist method of testing. Yet this is not a consolation that historical prediction by way of using 'rhythms' or 'patterns', 'laws' or 'trends' of history can be arrived at by a physics-type scientific prediction. Scientific predictions do not necessarily have to be physics-type even though such prediction is typical of good theory in

physics. Nevertheless, a historical prediction does not have the necessary impetus of a falsificationist method of testing that can be found in natural science.

The refutation here is that the social sciences cannot lay bare the law of evolution of society in order to foretell its future. Consequently, there can be no prediction of the course of human history by scientific or any other rational method. Popper's contention was that human knowledge is fallible, and as such "if there is such a thing as growing human knowledge, then we cannot anticipate today what we shall know only tomorrow" (Popper 1957: VI). Accordingly, the evolution of human society is a unique historical process. Human action can neither be predicted with precision, nor the history of the future events or societal development with certainty.

On the one hand, I maintain that Popper was correct to say that the historicists were mistaken in their stance on the equation between "laws" and "trends". The pro-naturalist historicist is committed to the methods of the natural science being applicable to the social sciences. Popper by contrast insisted that there are no laws of the succession of historical events by which the social scientist might predict future social developments. At best it is possible to identify trends, not laws. Laws as understood in science are mostly applicable to situations under the same conditions, often implying a causal relationship between the occurrences. In situations where there are causal relations that are subject to a scientific law, such as, for instance, 'water will boil below 100 degrees Celsius if air pressure is adequately reduced'; 'in the planetary motion of the solar system Jupiter (relatively to Kepler's predictions) will speed up somewhat as it begins to overtake Saturn just as Saturn (relatively to Kepler's predictions) will slow down somewhat as Jupiter begins to overtake it'; or that 'if I turn the car key the vehicle will start', it is clear that prediction is possible because of ascription of a law. Laws support prediction of events, just as they inform us how the events are caused. However, within the social environment, Popper maintains, there are not any such laws.

On the other hand, Popper recognised that causal laws are an extreme or limiting case of a more general type of conditions. Weather forecasting, for example, will operate using knowledge of trends, but the predictions cannot be hard and fast as they would be if they tracked a strict causal kind of law. The predictions will instead be probabilistic. A forecaster's statement that it will rain at 8:00 am tomorrow may perhaps have been drawn from a prediction that there is a 60%-70% chance of rain tomorrow morning. A situation where such a prediction fails, and

instead of rain in the morning the sun appears glowingly, cannot by itself decisively impugn the forecaster's way of theorising the weather. For, the thinking was bound to be probabilistic. One could still find a way to test empirically a theory that is probabilistic, however. One could consider the frequency to see if that matched the theory's estimation of chances. Wide disparity would begin to count against the theory, though Popper maintains that chances mean something different from frequencies, so disparity is possible without contradiction. Still it would take a dogmatic person to hold on to a theory that implied 60%-70% chance of morning rain on a large number of mornings where, say, rain actually occurred with merely 10% frequency.

For that reason the notion of 'trends' as distinct from laws is inadmissible within testable science. Popper averred that the events of social development can only be associated with trends, not laws. Moreover trends in the social environment are themselves susceptible to change. This is quite unlike laws in science which are usually both universal and conditional. Trends allow conditional prediction but do not allow long-term forecast. Trends are not suitable for long-term forecast because of their inherent uncertainty.

If we look at the trend of social and political change in, for instance, the politics of the United States of America, it might be agreed that ever since the 1776 declaration of independence, democratic government has been in place. That then would be a trend for maintenance in the U.S. of democratic government. However, even such a trend can break down. If some condition that is significant for the maintenance in the U.S. of democratic government were undermined, then there might be a change, perhaps a quite sudden change, say to military rule. The expectation of continued democratic rule in the United States of America might, say, have been dashed by a group of military generals, who did not recognise how the protection of something dear to them would really be a quashing of the former political order. They might change the face of politics and hugely alter the course of events. If every societal trend is like this however, defeasible by defeating conditions that might come along, then trends are no good basis for the kind of 'unconditioned' predictions seen, for example, in Marx's historical prediction of the coming of a classless society. Prediction of events of social development according to some prophesied sequence is impossible.

Nevertheless, Popper himself identified prophesy as a trend that can be self-fulfilling. Popper referred to this as the "Oedipus effect" (Popper 1957: 13). Popper used the legend of Oedipus, a mythical king in Greece, of whom it was prophesied that he would kill his father and marry

his mother. The particular prophesy in question itself played a causal role in Oedipus actually fulfilling it. Popper's discussion focuses on the important role played by an oracle in the series of events which led to the prophecy being fulfilled. To Popper, what can bring about the fulfilment of a prediction or prophecy in the social sciences is such an Oedipus effect (Popper 1957: 13). This is however but a contingent trend. It is not a law that prophesy will be self-fulfilled.

The above discussion shows that the refutation of the historicist doctrine of the social sciences by Popper is powerfully well thought-out. I maintain that Popper cogently captured the flaws in the idea of historical prediction of social development with his distinction between immutable scientific laws and contingent social development trends. The failure of the historicist to distinguish what in fact is a critical difference between the two domains weakens the historicist argument

Consider this simplified hypothetical argument in syllogistic form: if I maintain that the United States of America (USA) attacked Iraq with military force because the USA believed that Iraq had developed a nuclear weapon; and if I consider that the USA has now threatened to attack North Korea with military force if the USA can establish that North Korea has developed a nuclear weapon; then what must I expect to be the USA's action if Iran develops a nuclear weapon? The answer is of course that I cannot know with any completeness or certainty what the USA will do. This follows from the same arguments that tell against historicism. Actions of the USA are not subject to immutable, causal laws.

In this connection, Popper's refutation of historicist doctrine regarding prediction of future social development rests on the explanatory power of the four-element schema of problem-solving he symbolises as "P1 ---> TS ---> EE ---> P2". Although the schema has to do with stages in the criticism of successive theories it is also applicable to the criticisms of historicism that Popper made. Popper established the four-element method of problem-solving whose first point in this schema is to identify the problem (P1), which will lead to finding tentative solutions (TS). These are subjected to error elimination (EE) through critical rationalism, and from there emerges a new problem (P2), and the process continues (Popper 1972: 243).

This is the process that Nicholas Tilley regards as an emergent theory in Popper's philosophy because of the way new problems emerge in Popper's schema of problem solving. Tilley's assumption is that Popper's schema of problem-solving is a historicist law (1982: 64). Tilley's

contention is that Popper's schema authorises unconditional prophecies because of the way it demonstrates that if (TS) is insufficient for the purpose it is intended then a new emergent (P2) would arise, with the process continuing indefinitely. Tilley sees this as a historicist predictive inclination and as such Popper adopts the same position he rejects in *The Poverty of Historicism*. However, Struan Jacobs' response to Tilley coincides with the position being defended in this thesis that Popper's schema is in no way indicative of historicism because the schema is explanatory not predictive and undoubtedly not prophetic (Jacobs 1983: 204). Popper's schema of problem solving is incompatible with an unconditional prediction in the social sciences because it relates to how human beings are constantly testing the conjectural knowledge they have of the world as they attempt to solve the problems they face with respect to their experiences. In fact, Popper affirmed in the preface to *The Poverty of Historicism* that knowledge cannot be predicted either by rational or scientific methods, and that knowledge strongly influences the course of human history.

So when Popper argued that historicism was theoretically misleading and fundamentally dangerous, what he was saying is that historical predictions of social development have negative effects on proper social reform because they are similar to unfounded prophecies and revelations. In Popper's view, the Jewish idea of the chosen people; Plato's idea of the philosopher-king; Hegel's idea of absolute spirit; and Marx's eschatological idea of the end of history which presupposed the coming of a classless society, are all manifestations of the "oldest dreams of mankind- the dream of prophecy; the prophecy of social, political and institutional development" (Popper 1957: 44). Typically, they are examples of moral historicism; because they infer moral values from historical situations. They represent the idea that what was good in the past (conservatism), good in the present (positivism) would also be achieved as good in the future (futurism)<sup>27</sup>.

Certainly, Popper's views on the effects of historicism on intellectual and social life are clear. His arguments are convincing. Yet it seems that there is an element of exaggeration in his account of why historical determinism is implausible. Popper advocated that the 'logic of the situation' helps explain our actions in terms of the situation in which they occur, but there are some events within socio-economic and political developments that are not necessarily

---

<sup>27</sup> See Popper's discussion on 'moral historicism' in *The Open society and Its Enemies*, (pp.199-211) where he discusses the ethical implications of Marxian historicism.

compatible with the regularity theory of historical explanation. While Popper can be said to be correct in his rebuttal of historical determinism it might also seem plausible, as Jeremy Shearmur (1948- ) in Shearmur (1996: 46) notes, that a certain kind of human action may generate consequences of which we can derive a historical explanation. It might moreover seem plausible that Popper held this to be the case. This is also true of the case of the USA and Iran above where there may be some usual conditions which pertained in each case which causes the USA to attack, and if these conditions were to be met then the USA would attack again, as reflects the ‘logic of the situation’.

### **Popper’s Critique of Holism**

A further related issue to this discussion is what Popper referred to as ‘holism’. Similar to the way that Popper was appalled by the historicists’ claim to have the capacity to predict events of future developments, he was also dissatisfied by holists who seem to exude confidence that they can study, control and reconstruct society ‘as a whole’; similar to the manner in which controlled experimental demonstrations in science are carried out. Holism is often contrasted with methodological individualism: “the doctrine that all social phenomena, and especially the functioning of all social institutions, should always be understood as resulting from the decisions, actions, attitudes, etc., of human individuals, and that we should never be satisfied by an explanation in terms of so-called “collectives” (Popper 1945b: 91). A more detailed discussion of methodological individualism will be provided in chapter 7 of this dissertation.

Popper made the point that what the holist considers as studying ‘wholes’ may be viewed from two perspectives. The holist may see ‘whole’ as “(a) the totality of all the properties or aspects of a thing, and especially of all the relations holding between its constituent parts...” or may understand whole as “(b) certain special properties or aspects of the thing in question, namely those which make it appear an organised structure rather than a ‘mere heap’ “ (Popper 1957: 76). The apparent equivocation between the two senses in which the word ‘whole’ is used stems from the idea that since ‘wholes’ can be scientifically studied in sense (b), wholes in sense (a) can also be studied. Popper rejected the study of wholes in sense (a) since “it is not possible for us to observe or to describe a whole piece of the world, or a whole piece of nature..., since all description is necessarily selective” (1957: 77). It is in this sense that the study of wholes in sense (a) is sharply distinguished from sense (b) because a scientific description of a whole

concrete social situation is impossible. Consequently, the holist confusion about the scientific study of wholes in sense (a) cannot also be applied to concrete historical and political situations.

In Popper's view, "it is a mistake to believe that there can be a history in the holistic sense, a history of 'States of Society' which represent 'the whole of the social organism' or 'all the social and historical events of an epoch'" (Popper 1957:81). To him, history, like any other kind of inquiry, can only deal with selected aspects of the objects in which it is interested. Popper noted that a description of the whole history of human society is impossible because the list of characteristics making up such a description would be indefinite. Popper said it is a mistake to think that social processes can be observed in wholes, which may consequently result in the possibility of a historical prediction in social and political life. It is a mistake to attempt to regulate the whole of social life informed by the historical method because this would be to engage in large-scale social planning. He averred that human history is a series of unplanned events, and that large-scale social planning exercises a negative practical effect on proper social reform. It is a utopian dream to be involved in large-scale social planning and such attempts at total control of social situations often lead to totalitarianism.

Broadly speaking, the holist idea of regulating the society as a whole that Popper criticised serves as the basis for his claim that social reform must take a more piecemeal form: a method for making a few changes or performing minor reforms. Piecemeal social engineering is a method of problem-solving by trial and error recognising the fallibility in human existence. Popper prefers piecemeal social engineering to holistic/utopian social engineering. In Popper's view, holistic/utopian social transformations only aim at regulating the 'whole of society' in relation to a definite plan or blueprint. The piecemeal approach attempts to locate and eradicate the greatest and most urgent evils of society. In Popper's estimation, holistic/utopian social engineering has a negative effect on piecemeal change; it does so in a manner that negates the benefits of such change, since the approach of remodelling the whole of society restricts an adequate estimation of the effects of piecemeal reform. In Popper's view, owing to factors such as the range of possible outcomes and reactions in the human social environment, the problem of holistic/utopian social engineering lies in that it can never fully predict its effects on social behaviour.

The sense in which Popper's argument against holism in sense (a) is an illumination of how the study of the 'whole' is inappropriate in concrete social and political situations. So the idea

that social institutions in the society- for example, politics, culture, religion and sexuality, can be studied as a whole without recourse to a plurality of social institutions across time and space is incorrect. By implication, Popper's refutation of wholes is suggestive of a pluralism that is inherent in his critical rationalism, only implicit in his philosophy of science but more explicit in his political philosophy within the study of societies, social institutions and politics, and how they function separately.

### **Popper on Piecemeal Social Engineering**

As already noted Popper preferred social and political reform to be piecemeal. He recommended piecemeal social engineering as a model of how society is to be reformed over against a holistic/Utopian social engineering. Holistic/Utopian social engineering involves large-scale planning and the result often leads to totalitarianism.

The piecemeal social engineering that Popper favoured for social and political reform seems attractive when we consider the risk and the unintended consequences that may arise from large-scale social reform. Piecemeal social engineering, as Popper contended, would mitigate the dangers of attempting the reform of society in wholes instead of applying the bits-and-pieces approach.

In spite of the reasonableness that accompanies the trial and error approach of piecemeal social engineering many critics have faulted Popper's usage of the term 'engineering' in association with social and political reform<sup>28</sup>. Friedrich Hayek (1899-1992) was one of the first major critics of Popper's piecemeal social reform. Hayek's concerns were of two kinds: First, he was concerned that piecemeal social engineering as Popper described it may be accompanied by a growth in bureaucracy, given the technicality and procedural approach implied by the term 'engineering'. An engineering approach in this sense may hinder rather than foster social reform. Second, he was concerned about the nature of engineering which is typically centralised in terms of how knowledge and the control of engineering projects rests in the hands of a small number of engineers. Consequently, Hayek contended that knowledge suitable to proffer solutions to the problems of society must not be centralised in the manner typical of engineering. As such, Popper's social engineering may inadvertently be involved in centralised planning like the large-scale planning it is intended to criticise (Hayek 1979: 157, footnote 25).

---

<sup>28</sup> A comprehensive examination and analysis is done in chapter 6.

Over against the effects of an overbearing blueprint for social policy that accompanies holistic/utopia social engineering Popper responded that the benefits of the piecemeal approach are much greater than the former. Popper's response to Hayek is that the knowledge the social engineer possesses will help him decipher his limitations, particularly through the formulation of a legal framework; as such the benefits of social engineering will be greater than the cost of undertaking a utopian social engineering... However, what Popper did not address, is whether the knowledge of such limitations will actually prevent the engineer from implementing grandiose plans that suit his fancy. It is on the basis of this that Douglas Williams (1989) criticised Popper for putting all hopes on the social engineers or technocrats to reinvigorate liberal democracies. His argument is that the more authority or control put in the hands of the engineers the more they may be detached from the "informed oversight, control and possible understanding of the general public" (Williams 1989:184). The crux of Williams' argument is that social engineers may form a bureaucratic network which may threaten the very form of liberal democracy they are meant to uphold. The unintended consequences of the bureaucratic social engineer may result in the "needs of the system replacing the need of the people, administration replacing politics, management replacing leadership, and so on" (Williams 1989:184).

One major term that needs further clarification in the light of Popper's piecemeal approach to social reform is "planning". Popper's insistence that social engineering must proceed piecemeal clearly forbids large-scale social planning. Ordinarily, the term planning appears sensible in terms of, for example, the planned itinerary that every individual undertakes on a regular basis; what governments or social institutions take upon themselves to do when planning in terms of preparedness for natural disaster; what mothers do in preparing for childbirth; and what parents do to plan for their children's university education. The above descriptions are fundamentally different from what Popper associated planning with in holistic/wholesale/large-scale planning. The latter is in the sense of forecasting what the future will look like, over against what the future should look like.

The latter type of planning is that of which Popper, Ludwig Von Mises (1881-1973) and Hayek were critical. This difference between the two types of planning seems analogous to the *is-ought* meta-ethical problem that Hume highlighted in distinguishing between descriptive statements (about what is) from prescriptive statements (about what ought to be). Planning can be used in both descriptive and prescriptive senses. In the descriptive sense, it is an essential

thought process needed for regular human activities to respond to immediate or remote issues that human beings are confronted. Popper intended the descriptive, and it is different from the prescriptive nature of large-scale social planning which he critically regarded as utopian dreams of future prediction.

### **Popper on Freedom and Negative Utilitarianism**

Two other essential themes in Popper's philosophy of politics are his liberal idea of freedom and the concept of negative utilitarianism. Both are clearly ethical themes that for Popper interrelate with one another within the realm of politics. Regarding freedom, Popper was concerned about the well-being and freedom of the individual. 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 action without external constraints yet such freedom is exercised with respect to the freedom of others within the social environment.<sup>29</sup>

The other aspect of Popper's ethical and political theory which is an essential aspect of piecemeal social engineering is what he described as negative utilitarianism: the view that the aim of public policy is the alleviation of suffering rather than promotion of happiness. Popper's negative utilitarianism is an agenda for politics which is to be implemented by means of piecemeal social engineering. Although most utilitarian theories, such as those of Jeremy Bentham (1748-1932) and John Stuart Mill (1806- 1873), 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 recognised 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. Popper was however quick to mention that “state intervention should be limited to what is

---

<sup>29</sup> I will not discuss the inherent individual and social dimensions to Popper's idea of freedom in detail here; it is the major topic of discussion in chapter 7.

really necessary for the protection of freedom” (Popper 1945b: 130) in order to avoid the danger of increasing the power of the state. So the piecemeal approach of governments will involve trial-and-error attempts to mitigate these acknowledged harms; and when those urgent evils of society are dealt with piecemeal, it is with a view to best learning from one’s mistakes. No matter how slowly this piecemeal approach proceeds the outcomes are better than the consequences of the totalitarian holistic or utopian/large-scale social planning approach to social and political reforms.

### **“New” Historicism**

Admittedly, the period during which Popper wrote both *The Open Society and Its Enemies* and *The Poverty of Historicism* was quite different from the era that we are living in now. In recent times, a number of issues concerning the difference between natural and social sciences about historicism have emerged, issues that *The Poverty of Historicism* either did not cover at all or did not express in a manner apt for our own political situation (Jarvie 1982: 90). A new historicism that developed in the 1980s based on the structuralist and post-structuralist theories of Michael Foucault (1926-1984) became widespread through the work of Stephen Greenblatt (1943- ) (Mikics 2007: 205). New historicism seeks to understand cultural and intellectual history through literature. It approaches historical events based on Foucault’s concept of episteme which seeks to examine different literatures in order to understand the cultural knowledge of a particular time (Veeser 1989: 34). In spite of the current discussions on new historicism the ideas that Popper expressed in *The Poverty of Historicism* are not invalidated. Times have only changed. Art will attempt to violate any rule imposed upon it but Greenblatt’s work far from giving the lie to Popper’s helps illustrate it. It represents a brief flowering of an intellectual turn that could not have been predicted and that has briefly breathed life back into ambitions for prophesy and into holistic irrationalism.

### **Conclusion**

The issues and events that informed the writings of *The Poverty of Historicism* as well as *The Open Society and Its Enemies*, vis-à-vis the rise of fascism and communism in Europe may seem to be no longer the case. However, one may consider on the contrary that there are still some current factors conducive to the rise of fascism. Moreover, the fact is that there are still many known Marxists and communist societies that would see the world being organised on the socio-economic and political doctrines of Marxism. There consequently is the continued

relevance for Popper's political philosophy in its stringent criticism of Marxian historicism. Popper as political philosopher remains well worthy of examination.

The next chapter deals exclusively with Marxian historicism and the development of Popper's political philosophy. The development of Popper's political philosophy emerged as a reaction to explain the phenomenon of totalitarianism and its "false prophets" (Popper 1945b:229) or those that could be described as intellectual enemies of the open society- such as Plato, Hegel and Marx. However, in the light of the fact that Popper's compelling criticism on historicism and the attack on totalitarianism falls most heavily on Marxism discussion on the development of Popper's political philosophy is focused only on Marxism.

## Chapter Five: Popper on Marx and the Development of Popper's Liberalism

*It is this moral radicalism of Marx which explains his influence; and that is a hopeful fact in itself. This moral radicalism is still alive. It is our task to keep it alive, to prevent it from going the way which his political radicalism will have to go. 'Scientific' Marxism is dead. Its feeling of social responsibility and its love for freedom must survive.*

*(Popper 1945b:199)*

### Introduction

Further to my discussion in the previous chapter of Popper's general attack upon historicism, in the present chapter I shall elaborate upon Marxism as a historicist doctrine and upon the critique that Popper made of Marxian historicism. To Popper, Marxism combines both allure and pathology. Popper was both attracted to and repelled by Marxism. Negotiating this intellectual dilemma led Popper to develop his brand of liberal-communitarian political philosophy. To Popper, the historicism by which Marxism is characterised directly leads Marxists to support holistic/utopian social engineering, that is to say, large-scale, revolutionary social planning and change. Popper rejected and denounced this radicalism. Popper's critique of Marxism is central to the development of his political philosophy, and it especially strongly informs the philosophical basis upon which the balance between individual and social aspects of Popper's critical rationalism rests. So, as previously discussed, Popper used his theory of falsification, which incorporates a balance between individualism and community of values in philosophy of science, as his criterion for demarcation of science, in order to reveal the pseudo-scientific nature as he regards it of Marxism. Also bearing upon political philosophy, Popper's falsificationism also neatly underwrites his rejection of the historicist/holist philosophical disposition of Marxism. Against Marxian historicism, Popper developed the political philosophical theories of piecemeal social engineering and of greater stress upon the freedom of the individual. These culminate in an overarching principle of liberal-communitarianism.

Consequently, the two related arguments in Popper's critique of scientific Marxism are: the critique of Marxian historicism, and the critique of Marxian holism. In the first on historicism, Popper criticised Marxism for Marx's thinking that his theory was scientific, scientifically accurate, and historically inexorable. Marx thought he was able to scientifically predict an inevitable transition of capitalism to socialism through the use of "an inexorable law of

history”. However, according to Popper, Marx in fact quite failed to be scientific in the way he prognosticated in his inquiry into the workings of society. This is because, according to Popper, Marx failed to truly expose his theories to potential tests, or to criticism.

Regarding holism, Popper criticised Marxism for its attempts to reconstruct or reform society in ‘wholes’. According to Popper, who had, by the time he was writing, the benefit of significant historical hindsight, such attempt would lead to utopian social engineering/large-scale social planning which in turn leads to totalitarianism. There seem few reasons to deny that these criticisms of Popper’s hit the mark.

Two further rounds of arguments are examined in Popper’s critique of Marxism. First, I note that Popper employed the term ‘falsifiable’ centrally to his philosophy of science, then used the term ‘unfalsifiable’ to lambast Marxism for (according to Popper) its failure to be scientific. I believe that this criticism of Popper’s against Marxism also entirely hits the mark. Following Popper, I maintain that Marxism is not a scientific theory. In agreement with Popper, I argue that Marxism is a pseudoscience. My position gains support from arguments developed by Ernest Van Den Haag that Marxism was never based on the scientific truth-content of its theory (Van Den Haag 1987: 26). Marx seemed to have assumed that there is an “essential affinity between the study of human society and the study of nature” (Mendel 1966), and to have on that basis concluded on formulating scientific laws of history. Since Marxism is based on uncritical and untested theory of scientific laws of history, its scientific approach to socialism is not only false but also unscientific.

Second, from his criticisms of holism and of large-scale planning or utopian social engineering Popper developed his philosophy of politics. In place of totalitarianism, which often comes from an increase in state power because of large-scale planning, Popper emphasised individual freedom. In place of utopian social engineering Popper emphasised piecemeal social engineering. Consequently, the concepts of individual freedom and piecemeal social engineering became the rallying themes, among others, of Popper’s philosophy of politics. There is however ample communitarian focus in Popper’s own conception of what makes for “negative utility”, and that becomes on that basis a well-motivated reason for piecemeal social engineering. Both the liberal concepts of Popper’s philosophy of politics that concern individual freedom, and the strong residual communitarianism in Popper’s outlook, I shall discuss separately in succeeding chapters.

## Marx on Scientific Socialism

The Marxian theory of class struggle is an essential part of Marx's "scientific socialism". Marx's theories about society, economics and politics all maintain that a class struggle exists within the history of human societies and together these theories make out the effects of this struggle as a progression from one stage to another. Marx developed a theory of historical materialism that explains the progression that he alleges that there is in terms of the material conditions of human existence. Marx believed that society's inevitable progress and its historical transition is scientifically determined by economic "laws of motion". The "laws of motion" or what is sometimes called "development trend" is based on Marx's prediction of how human society (capitalist mode of production in particular) would function, develop and transform (Marx 1977: 218). In the *Communist Manifesto of the People's Party*, Marx wrote that "the history of all hitherto existing society is the history of class struggle" (Marx and Engels 1967: 93). Marx held the view that there exist historically necessary stages of society with inherent economic, social and political conflicts among two groups always in constant class struggles with each other (Marx 1972: 171).

Marx viewed capitalist society as comprising two social classes: the Proletariats (workers) and Bourgeoisie (capitalists). Marx's held that in the capitalist society the workers are alienated from the commodities they produce. Marx explained that the focus of the capitalist is to produce commodities for the exchange market and that in order to maintain a high level of profit the capitalist must extract as much labour from the workers as possible at the lowest possible cost. This heralds the labour theory of value as advocated by the British economist David Ricardo (1772-1823) and accepted by Marx. So since it is the case that the workers' demands are exactly the opposite of the actions of the capitalists—that is, since the workers seek to receive the highest possible wages for their work, just as the capitalist owners seek to pay as little as possible—the struggle between the two classes is inevitable.

Marx stressed that capitalism was unstable, and prone to increasingly severe crisis. Marx termed "contradictions" to capitalism patterns whose conditions of existence are also key ingredients for their own demise. Marx believed that the role that internal social contradictions play in the historical process of capitalist society would result in internal implosion. The increasingly severe crises would puncture even the cyclic growth of which capitalism is for a while capable and lead to collapse. Marx held that capitalism will implode not only because

of its competitive private character, but also because of the anarchical tendencies of the internal social contradictions (Roubini 2011: 2). Marx concluded that those structural contradictions within capitalism will necessarily lead to its end, giving way to socialism, and an eventual transformation to a communist society.

Marx's transformation agenda is aimed at a progressive kind of nationalism that benefits only the proletariat. In the *Communist Manifesto*, Marx re-asserted the conditions under which the proletariat must first acquire political supremacy. Through the 'dictatorship of the proletariat' the proletariat would rise to be the leading class of the nation, the intention is to be nationalistic, but not in the bourgeoisie sense of nationalism (Marx and Engels 1848: 127). In a sense, Marx rejected the kind of nationalism that tended to distract the proletariats from their progressive objective of overthrowing the bourgeoisie. However, Marx supported the kind of progressive nationalism that promoted international class struggle.

Marx followed Hegel who supported nationalism essentially through the defence of 'positive freedom' as central normative concept and the nation-state as bringing to highest form of what 'positive freedom' can come to. A person is 'negatively free' who merely has liberty in the liberal's sense. Negative freedom requires absence of constraint upon a person against their following their own appetites and desires. Positive freedom in Hegel's sense is utterly different, and depends not on the nation's power over individuals being limited, but on the contrary, upon individuals being bound up in national aspirations so far as their own functioning or purposefulness and so far as their own freedom is concerned. Hegel conceived of human societies as entities that were greater than the individuals. This nationalist conception influenced Marx who by contrast 'stood Hegel on his feet' and so charted a course that would eventually lead the proletariats to a kind of progressive nationalism that benefits them only. Marx also got from Hegel's account a holist perspective which promotes the prioritisation in Hegel's account of the nation-state above that of the individual. This accounts for reasons that Marx's holism is said to promote central planned/large-scale planned economic system in which communist nations are known to do little to value the individual. Marx's holism is also too strongly supposed that freedom must be positive, in much of the state controlled economy which undermines individual rights, in much of Hegelian, nationalistic sort of way.

'Tribalism' is Popper's disparaging term in effect for nationalism; and Popper used the term to place Hegel and in particular Marx, as enemies of the Open society. With Popper, the

categorisation of some societies as “tribal” is with a classification of whether a society is marked or not by a critical attitude. As much as Popper wished that every facet of human endeavour including science to be intellectually ”open” he emphasised this “openness” more within the realm of politics. His experiences with many of his intellectual colleagues of the political turmoil in Europe led him to assert that Europe at the time was a tribal and closed society because of the prevalent totalitarianism. Europe, during the time that Popper wrote, became intellectually stagnated through political manoeuvring and selfish nationalist ethnicity. In recent times, a good many expressions of nationalistic ugliness have again expressed themselves, for example, the xenophobic nationalism of far-right-wing political parties in various nations. This is a far cry from what Europe was in the 18<sup>th</sup> century and early 19<sup>th</sup> century where European civilisation was almost already at its peak. Then in the 20<sup>th</sup> century as Popper viewed things, Europe became tribalistic standing civilisation on its head. Popper traced the origin of this tribal totalitarianism in Europe to the theories of holism and historicism in which history is said to unfold according to inexorably ‘universal’ laws that can be found in the philosophies of Plato, Hegel and Marx.

Certainly, with Marx’s belief in the inexorable laws of history, Marx thought that he could predict social, economic, and material phenomena by examining their historical trends in order to derive probable outcomes and probable future developments. With this understanding, Marx felt that he could truly scientifically predict events of future societal developments. This theory is what Marx thought was scientific, just on the basis of its historical analysis and not on its empirical basis. This presupposition is historicist, and is a chief target of criticism by Popper.

### **Popper on Scientific Marxism**

Certainly in the mid-nineteenth century Marxism had seemed to warrant being called a scientific theory. This was exactly when Darwin’s theory of evolution became influential, and people at the time who had regarded Darwin’s contribution as scientific would have been hard pressed to find any reasons to deny the same status to Marx’s theory. Common to both doctrines is the struggle to survive through natural processes. While Darwin’s theory draws inspiration from natural processes of life, Marxism draws inspiration from social transformation and a kind of naturalistic historical interpretation. This is why Frederick Engels (1820-1883) emphasised that “just as Darwin discovered the law of development of organic nature, so Marx discovered the law of development of human history” (Engels 1978, 162). So Marxism, at the

time, was accepted as a scientific theory owing to the nature of its identification of the social evolutionary process which was analogous to the biological evolutionary process that Darwin discovered. This forms the nucleus of Marx's scientific socialism. It is with the presumed authority of a scientist that Marx announces the historical inevitability of the coming of socialism and communism, and the eventual total collapse of capitalism.

Yet, precisely the perception that Marxism is science Popper attacked, and attacked vigorously. As previously discussed, Popper used his falsificationist demarcation criterion to distinguish between theories that are scientific from pseudoscientific theories. Popper viewed as pseudo-science Marx's "scientific materialist" interpretation of history. This was on a different ground from that upon which Popper dismissed Freud's psychoanalytic theory as pseudo-science. Psychoanalysis seemed to Popper logically unfalsifiable. Freud's theory seemed to Popper not to be saying anything that could possibly conflict with empirical evidence. Marx's theory was different because a critical person could engage with it in a way that used it to make predictions that experience could then show to be false. The problem with Marx's theory, Popper argued, is that neither Marx, nor the other Marxians, were critical in their way of engaging with the theory. They rendered their theory unfalsifiable by the uncritical way that they simply adhered to it. Popper contended that, ironically, Marx's theory is both 'falsified' and 'unfalsifiable'. It is shown to be false by actual history, provided you engage with the theory with a will to be critical of it. But Marxists themselves render it '*methodologically* unfalsifiable' because come what may they are not disposed to be critical of their theory.

What makes good science in Popper's view is the ability of a theory to be made out as false if it is, by empirical testing of it. Popper thus confronted Marx with the single word 'unfalsifiable'. Logically Marx's theory is falsifiable, because it was in fact "refuted by events that occurred during the Russian Revolution" (Popper 1992: 43). However, Marxism was made methodologically unfalsifiable because of the way that its proponents always defended it.

Popper developed a distinction between scientific prediction and unconditional historical prediction or historical prophecy, as I have illustrated in chapter 4. The former is conditional because scientists understand that any determinate prediction depends on conditions, such as the prediction that water will boil at 100 degrees (false if the ambient air pressure is far different from usual). The latter is unconditional in the Marxians' own telling of their prophecy. In any case it involves people and society at large, about whom we are not much able to specify

experimental conditions or controls. Actions such as, under what condition would a people revolt against a government policy, cannot be known as the boiling point of water is known. Human actions and society do not change unconditionally, and the conditions that there are are complicated and highly variable.

What the above argument presupposes is that one can control the conditions of a scientific experiment; hence the outcomes are conditional upon those controls. However, one cannot so readily control the conditions of social experiments or planning. This ultimately makes human actions and social change subject to intractable vicissitudes. The workings of society are less amenable than the workings of heated water to the control of conditions determining change.

I concur with Popper's criticism of Marx's idea of historical prediction. Marxism trades wholly in unconditional historical prophecy. This is not really prediction at all if the theory's adherents all treat the theory uncritically. The basis of Popper's criticism of Marx is that Marxism misinterprets scientific prediction as historicism. Marxism parades its unconditional historical prophecy as scientific prediction on the slim basis that the theory of historical materialism is a materialist conception of history, not idealist. Yet whether historical prediction is genuine prediction altogether rests on whether one can be critical of the theory if the predictions that it makes do not match empirical evidence. Since Marxism disallows this, its pretence of making predictions is false pretence. The metaphysical adoption of materialism in place of idealism is neither here nor there.

Consequently, I endorse Popper's criticism of Marx. Marxian historical prophecy is in fact inoculated against possible criticism and so is not really prediction nor is it therefore robust or truly interesting as prophecy. Even the emergence of some communist states in history did not pass through quite the stages that Marx prophesied or into quite the final form that he envisaged. Other states that he had predicted surely would progress to communism did not. The "dictatorship of the proletariat" that Marx predicted in fact turned out in Russia to be rather oppressive and merely totalitarian. Marx's historical prophecy furthermore confers upon the oppressed an emotional hope of a better future life, or indeed, the hope of a "heaven on earth". This is moral grandstanding and its prediction of future economic and political development is significantly inaccurate in fact.

Popper contended that while Marx's theory is potentially logically falsifiable based on events of history, it is also rendered methodologically unfalsifiable. This makes Marx's theory

insusceptible to true corroboration because of the way ‘vulgar Marxists’ have kept reinterpreting the evidence in order to maintain agreement with it (Popper 1945b: 93). The potential logical falsifiability of Marxism, Popper asserted, is as a result of its claim that it is in fully developed capitalist countries that socialist revolutions would occur; and that the socialist revolution would be carried out by the proletariat. On the contrary, both claims have been falsified by events of experience because first, the socialist revolutions did not occur in fully developed capitalist countries such as Belgium and England but what did happen was the Bolsheviks socialist revolution in backward and agrarian Tsarist Russia. Second, the socialist revolutions that later occurred in other places such as China, Cuba and Vietnam were also carried out, not by the working class, but through the peasantry. Marxist scientific prediction of the historical inevitability of future social developments and especially of revolutions is demonstrated to have failed, and thus has been falsified. The fact that Marxists simply dismiss such criticism, shows that Marxists’ prediction is nothing but that kind of prophecy that adherents cannot imagine would fail.

### **Should Marxism be defended against Popper’s Critique?**

For intellectuals who are ideologically socialist, Marxism remains the moral and intellectual foundation. However, the allure of a world, where distribution of income will be done according to one’s needs, has faded, much as has the confidence that it will come about, after the eventual collapse of capitalism and an inevitable transition to socialism. Reformed hopes of Marxist *glasnost* and *perestroika* have also not been fulfilled (Sheehan 1993: xv). Instead of having Marx’s prophecy fulfilled, ever more once socialist societies are embracing a free market economy. Rather than a Marxist future the turn of actual events has been going in quite the opposite direction.

Admittedly, Marxism is an influential doctrine. We cannot lose sight today of the basic facts of classical liberalism that Marxism set out to criticise over 150 years ago. Marxism is one of the most influential doctrines that exposes the exploitative dimensions of capitalism. Marx’s identification of class struggle particularly within capitalist societies appears sensible given that the struggle between the bourgeoisie and the proletariat only appears in complex and developed classical liberal capitalist societies. Marx’s claim that the class stratification that the capitalist society creates between the proletariat and the bourgeoisie alienates labour, impoverishes workers, and establishes surplus value for the capitalists, remains true in our

world today. Popper too did admire Marx's temerity in Marx's criticism of both capitalism and its attendant economic and social evils. This is evident when Popper acknowledged as fair and right "Marxists' insistence that the social problems of our time are urgent...and that as philosophers we should not be content to interpret the world but we should help to change it"<sup>30</sup>. Moreover, it is the same concern with the evils of unrestrained capitalism that prompted Popper to develop a theory of negative utilitarianism. Clearly, the aim of both Marx and Popper was to reduce the burden of economic exploitation and reduce human suffering. Where Popper diverged from Marx was over Marxists' scientific claim of the materialist interpretation of history (Popper 1963: 34).

The continued relevance of Marxist socio-economic philosophy in contemporary times cannot be denied. The model of society as structured by the economic basis, legal and political superstructures and a definite form of social consciousness that Marx presented both in *The Capital* as well as in the *Preface to the Critique of Political Economy* remains important to socio-economic theory. Marx presented theories which explain such kind of evil in capitalism. Today, capitalism has produced the multinational corporations that can assemble far more effective intelligence behind their often nefarious designs than any nation's government can assemble to try to hold multinationals at bay. The machinations of international capital are huge, and affect conditions in every country with a uniformity and to an extent that makes one begin to think that in the present day 'nation state' is politically almost a non-entity. The separation of capital from means of production is pretty eerie and strange in the present day. As things go now with the capitalist system, there is an indication that there is some foresight in some of Marx's prognostication. The world seems to continue to acquiesce in the vast control of economic and political resources by the wealthiest 1%. However, even if Marx's prognostications were vindicated in some ways they would be refuted in other ways — for there is not the least anticipation in *Das Kapital* or elsewhere in Marx's writing that the world could be heading in the direction of globalised economies and prodigious clout by multinationals, some specialising in what has little to do with any actual production of anything.

---

30 This can be found in the paper "Prophesy and Prediction in the Social Sciences" that Popper delivered to the Plenary Session of the Tenth International Congress of Philosophy in Amsterdam (1948). A more comprehensive discussion of this can also be found in *The Poverty of Historicism*.

A Marxist scholars who defended Marxism against the charge of historicism was Gerald Allan Cohen (1941-2009). Indeed, Cohen's analytical Marxism, a defence of Marxist's historical materialism, is an affirmation of the logical coherence and clarity in methodology of this theory. Cohen deployed his analysis and defence of Marxism on the nature of human rationality and intelligence. His in-depth philosophical analysis was anchored on the premise that the rational character of the human person makes possible the fact that economic relations of production are functionally explained by the productive forces. At one and the same time, Cohen insists, the superstructures are functionally linked to and explained away by the relations of production (Cohen 1978: 112). Cohen argued that Marxist theory of history can stand without the dream of prophecy. However, Cohen ostensibly left out the part of Marxism which emphasises the "inexorable laws of historical destiny". Rather, he accounted for events in human history in Marxism, not by a prophecy, but by rationality that determines the mode of productive forces.

Many criticisms, such as that from Richard W. Miller, have been motivated by Cohen's 'defence of Marxists' historical materialist' position. Miller berated Cohen for presenting a non-dialectically oriented version of Marxism. Miller was of the opinion that the intellectual study of Marxism cannot occur in isolation from the struggles and the revolutionary praxis of intervention in world affairs. In this respect, Miller re-emphasised the role of class struggle in the transition from one mode of production to another that is consistent with Marxism (Miller 1984: 121). This criticism reiterates the constitutive elements of Marxists historical determinism. It demonstrates that the transition from one mode of production to another constitutes the prediction of historical destiny that Marx made.

Like Popper, Eduard Bernstein's (1850-1932) revisionist interpretation of Marxism emphasised the point that Marxism is not a science, and that Marx's prediction about the development and eventual collapse of capitalism has failed. This position puts Bernstein in an opposite camp to Karl Kautsky (1854-1938). Kautsky, after the demise of Engels, continued to vehemently defend the economic theory of Marxism. Kautsky followed Marx in the historicist idea that social labour would be distributed among all individuals according to their needs and desires under primitive communism (Kautsky 1903: Chap. VII).

The point I am developing here is significant in two ways. Firstly, I acknowledge the significant contribution that Marxism makes to the diagnosis of the recurrent evils in unregulated

capitalism. Although the appeal to Marxism as an alternative to contemporary neoliberal capitalist hegemony made by Slavoj Žižek and Costas Douzinas (eds.) in the introduction of their book, *The Idea of Communism* (2011) has attraction, it is not convincing. The argument that the economic crisis of the early new century was caused by liberal capitalist economy, and as such has brought about struggle and agitations for a new economic and political order, cannot be substantiated. Granted that liberal capitalism, like every social economic model, has its weaknesses. However, its features of the open market based on property rights and human freedom are more desirable than fascist, socialist or communist regimes where state-run economies often make systemic corruption a semi-legal affair. So, in spite of their defence of Marxism, Marxism does not seem a suitable replacement of liberal capitalism.

Secondly, I re-emphasise the point that Popper's critique of Marxian historicism is correct. In spite of the defences of Marxism offered by authors such as Cohen, Kautsky, Žižek and Douzinas Popper's argument against utopian/large-scale planning or central economic planning reveals a direct consequence of the totalitarianism of Leninist-Marxist ideology.

In all of this, I argue that Marxism failed as a theory of social change because of its emphasis on predictions. The prediction was the promise of an ideal world which characterises the coming of a communist classless society that Marxism objectifies. It is on the basis of such utopianism that Popper labelled Marx a holist historicist, a person "making heaven on earth with a stroke of a dictator's pen" (Shearmur and Turner eds. 2008b: 60). If Marx had reduced the analysis of the capitalist economy to showing only its woes, and if he had not predicted an ideal, communist future for the world that would manifest itself due to the "inexorable law of history", Marxism may not have become a self-serving ideology.

### **Development of Popper's liberalism**

A form of liberalism in Popper, and by extension his whole political philosophy, evolved from his criticisms of the 'false prophets', the enemies of the open society. Popper charged Plato, Hegel and in particular Marx with historicism and named them the enemies of the open society. While the charges directed at Plato and Hegel are equally of significance in the development of his liberalism, Popper's critique of Marxian historicism is the focus of this section of the dissertation. The two basic features of Popper's liberalism that developed from this criticism, as earlier stated, are his ideas of individual freedom and the concept of piecemeal social engineering.

Popper labelled Marxian historicism as utopian/large-scale social planning which attempts holist/historicist prediction of future social development. Popper argued that knowledge is inherently unpredictable, and that how a society is structured depends on the knowledge it acquires. A society that attempts to structure itself on a predictable evolutionary pattern engages in a utopian/large-scale social planning or central economic planning debacle. Such a society is not marked by rational intellectualism and democratic transformations. It is also a society that does not promote freedom, human rights, justice, free-market economy and accountability. Evidently, such a kind of society is closed to freedom of thought, and its institutional systems are often totalitarian. Such kinds of society promote a system which encourages the need to have a strong centralised rule by a few and a centrally planned economy. It is a 'tribal' and 'closed' society. Popper, in a lecture called "Open society and the democratic state", expressed the following view:

*I believe that a free market-economy is more efficient than a centrally planned economy. Yet I hold that it is wrong to base the rejection of tyranny on economic arguments. Even if it were true that a centrally planned state economy is superior to that of the free market, I should oppose the centrally planned economy. I should oppose it because of the likelihood that it would increase the power of the state to the point of tyranny. It is not the inefficiency of communism against which we should fight, but its inhumanity and its inherent hostility to liberty. We should not sell our freedom for a mess of pottage, or for the promise that we shall obtain the highest possible productivity and efficiency — not even if we could be sure that we can purchase efficiency at the price of liberty.*

*(Popper, Archives Box 6)*

In arguing that utopian/large-scale planning or central economic planning increases the power of the state and also leads to totalitarianism, Popper also saw the need to develop the liberal idea of individual freedom. The consequence of utopian/large-scale social planning is that individuals risk the erosion of their liberty, not merely to profit from, but most likely never even to produce their own ingenious thinking. Where large-scale or central planners assume the position of autocratic rule and control government structures, people are indirectly forced against their will to respect this monopoly. Such practices are common among totalitarian governments with centralised planning. What we find from this, is suppression of the views of, participation of, and potential critical feedback from the populace. There is an absence of personal freedom and of possibilities for citizens to express and determine their wishes and aspirations. The concept of freedom which forms the basis of an open society cannot be found in this kind of political arrangement. The argument here is about freedom for creative

engagement in politics and in the economy. It also concerns the issue of the paucity of information available to the large-scale planners. The capacity to make free, rational choices (for the individual or in the interests of one's social environment) depends to a very large extent, not on mere proclamations, but on the practical ability to do so.

For Popper's liberalism, an open society, in which individuals rightfully make choices and thereby contribute information to the socio-economic and political process, would operate instead of a system of large-scale planning. For, that very openness, transparency and freedom would require all forms of political totalitarianism to have ended. It would seem that the goal would need to be to eradicate totalitarianism and establish openness and freedom.

Hayek's criticism of central economic planning, derived from the work of Von Mises, lends support to Popper's critique of utopian/large-scale planning. Hayek used his concept of "economic calculation" which places importance on the information provided through market pricing to argue that government interference in price allocation of goods lacks the method to allocate resources rationally (Hayek 1935: 117). Hayek used this concept as a yardstick to determine how resources can be rationally distributed in a society. Hayek criticised central economic planning as a shortcoming of socialist economies where the government owns and controls the means of production and distribution (Hayek 1944: 72). With his enthusiasm for a free market economy, Hayek advocated a pricing information system where individuals determine rationally how goods and services are distributed through their willingness to pay for these goods and services.

Although Popper had many of the same targets as Hayek, his critical engagement came from a different perspective. Hayek and Popper differed significantly on the grounds and the degree to which government can intervene in markets and society. Hayek advocated a limited state intervention because he believed that there were dangers and other unintended consequences, particularly against freedom, with state intervention. Popper, on the other hand, advocated government intervention. Popper addressed this intervention through concern to reduce the unintended consequences that may emerge in unrestrained capitalism. Popper was insistent upon the need to be cautious of unrestrained capitalism, or, what George Soros calls market fundamentalism, which, if unchecked, may lead to exploitation and a degeneration of society away from social and economic equality. Popper advocated the establishment of legal frameworks without which the unintended consequences that may arise from free-market

ideology may, themselves, endanger the individual freedom they seek to protect. According to Popper, “a free market can only exist if it is protected by a legal system, by a rule of law” (Shearmur and Turner eds. 2008b: 386).

With his criticism of utopian/large-scale planning or central economic planning, Popper advocated that social reform should be piecemeal. By addressing the large-scale economic and political planning with which totalitarian politics are beset, Popper deployed his concept of piecemeal social engineering as suitable for social reform.

More importantly, Popper’s liberal concept of piecemeal social engineering provides a significant impetus to understanding the evils found in the trend of large-scale planning that often characterises political landscape in totalitarian politics. Large-scale planning is done by way of government intrusion in the means of production and distribution of goods and services. Sadly, because of the centrally planned economic structure in those kinds of society, there is little impetus behind developing a free-market economy. Governments overwhelmingly influence pricing systems and their level of control creates a degree of apathy in the marketplace, from the private investor to the individual consumer. Despite government influence on pricing control mechanisms, these influences are ineffective owing to the corrupt nature of government institutions; either government institutions are often corrupt, or the powers of government institutions are often corruptive. Government pricing control breeds economic inefficiency and allows room for endemic and pervasive corruption. Lack of accountability because of economic corruption is tantamount to a failure of intellectual openness. The reason for this is that openness and transparency commonly evade large-scale planning that is done by one person or a small group of people in power. Von Mises is right to say that rational economic activity is impossible in an economy plagued with overwhelming government influences and control (Von Mises 1920: 22). The result of this kind of arrangement is economic inefficiency, gross misconduct and lack of accountability resulting into corrupt practices.

The results that such political corruption breeds are radically different from what Popper’s liberal ideas of piecemeal social engineering are intended to achieve. Popper likened utopian/large-scale social planning to holistic social engineering and asserted that we should think that only social engineering which is piecemeal is legitimate. The goal of Popper’s piecemeal social engineering is to apply the doctrine of negative utilitarianism in order to reduce or ameliorate

suffering through a trial-and-error method of eliminating and isolating issues and proffering solutions in bits-and-pieces. Due to the impossibility of acquiring knowledge of future social developments, social planning cannot be based on a blueprint idea of public policy. Social reforms have to be piecemeal rather than attempt to reform the whole society with definite large-scale planning. This is to mitigate any unintended consequences or acknowledged social ills that may arise in the course of social reform.

## **Conclusion**

I agree with Popper that utopian thinking in the manner of Marxian historicism muddles meaningful socio-economic and political reform rather than assisting it. Liberal socio-economic and political reform is ultimately non-utopian. Liberalism opposes large-scale social planning and, quite without reference to any utopia, supplies terms in which to be aptly critical of the totalitarianism with which Marxian historicism is predisposed. So, to identify with confidence some ways in which social and political reforms could be improved, does not depend at all upon a vision of a utopia. It depends on a kind of reform which carefully articulates the needed changes or restructuring to undertake with a view to best learning from one's mistakes. This is the piecemeal social reform that Popper advocated. It also depends on a commitment to respecting individual freedom and independent thinking and the degree of merit that individual ideas can benefit their originators.

I endorse the criticisms of Marxian historicism that Popper made. I agree that open democratic societies are far superior to closed totalitarian regimes which Marxism portends. Popper's insistence that social reform should be piecemeal (although I shall make modifications to this concept in the next chapter 6) constitutes a suitable model of liberal reconstruction of society. It gives room for Popper's idea that government must respond piecemeal to societal problems in order to mitigate the societal evils that may accompany large-scale social planning or central economic planning as Hayek called it.

Although Hayek's criticism of central economic planning counts significantly in the realm of liberal reform projects, the neo-liberal reform that Hayek's economic philosophy advocates is not in total consonance with Popper's insistence that social engineering should only ever be piecemeal. For Hayek, the neo-liberal case is that its prescriptions (market solutions wherever feasible) lead to good outcomes. Partly for the reason that Popper advocated state limited intervention, I do question whether the neo-liberal reform that Hayek advocates can have the

same kind of results that Popper is explicitly concerned that social reform should have. Although neo-liberalism promotes efficiency in private enterprise, it abolishes government roles in economic matters that Popper does not want. This is also contrary to Popper's idea of negative utilitarianism concerning the role of government in ensuring it reduces suffering among the people rather than promoting happiness. To counter this concern, Popper's condemnation of unrestrained capitalism and his advocacy for the formulation of a legal framework and government intervention are all the other endearing features of his philosophy of politics.

In the spirit of elaborating on Popper's political philosophy, I will further examine the philosophical implications of his liberal ideas of piecemeal social engineering and individual freedom in the succeeding chapters. Regarding piecemeal social engineering, it is with a view to assessing the theoretical basis of the bits-and-pieces approach to social reform that Popper recommends. Certain practical applications of the concept will be evaluated so as to consider the magnitude of reforms to which the trial and error, gradualist approach to social and political reform can undertake in real life situations. The conclusions reached in the next chapter and the modifications that I make therein have implications for a new way of looking at the piecemeal social engineering approach that Popper endorses for social reform.

Regarding individual freedom, further critical examination is made in order to highlight the theoretical basis upon which Popper grounds his philosophy of freedom in the realm of politics. An extension on Popper's liberal idea of individual freedom is considered as it concerns the notion of individualism that pervades his philosophy of freedom and politics in general. I shall argue that there is greater room for the social in Popper's liberal politics beyond the pervasive individualism he is best known for. In establishing the social dimension of Popper's idea of freedom, I shall defend a position on social freedom which emphasises both the explicit individualism and implicit social nature of Popper's politics.

## Chapter Six: Popper's Social Engineering: Piecemeal or 'Many-Pieces-at-once'?

*The characteristic approach of the piecemeal engineer is this. Even though he may perhaps cherish some ideals which concern society 'as a whole'... he does not believe in the method of redesigning it as a whole. Whatever his ends, he tries to achieve them by small adjustments and readjustments which can be continually improved upon ... The piecemeal engineer knows, like Socrates, how little he knows. He knows that we can learn from our mistakes. Accordingly, he will make his way, step by step, carefully comparing the results achieved, and always on the lookout for the unavoidable unwanted consequences of any reform; and he will avoid undertaking reforms of a complexity and scope which make it impossible for him to disentangle causes and effects, and to know what he is really doing.*

*(Popper 1957: 66-67)*

### Introduction

One of the most important themes of Popper's political thought is his mistrust of large-scale planning. Popper introduces an antithetical idea: the idea of piecemeal social engineering. Popper terms 'piecemeal engineering' the redressing of agreed social problems by a trial-and-error, bits-and-pieces approach. The specific end must be to ameliorate a condition that all reasonable people agree is a problem. The means to that end must be tentative: the social engineer must be fallibilist concerning any aspect of the approach that is taken. Popper expects that from epistemic modesty of this kind will also flow a disposition to respect individual rights and to protect against any injustice. Many Popper scholars such as Magee and John Gray (1948-) consider piecemeal engineering (as the centrepiece of social and political philosophy) to be isomorphic with falsificationism (as the centrepiece of a philosophy of natural science). For Magee (1973: 78) in particular, "Popper's political philosophy is seamlessly interwoven with his philosophy of science". Magee's claim was that with falsification, or with conjecture and refutation, Popper believed anyone may criticise and contribute, and equivalently, piecemeal engineering shuns authority or vaunted expertise and depends merely upon making it the case that one can learn from one's mistakes. Magee claims furthermore that, through this approach, we can better eliminate errors and make better social reforms than can be done by utopian/large-scale social planning. That is to say, piecemeal engineering may be modest, but modest is better. Based on this understanding, piecemeal engineering is claimed to provide a

practical underpinning for a scientific–experimental intervention in society involving a process of social learning.

However, not all Popper commentators agree with this. For example, Freeman’s (1975), denied that Popper’s philosophy of science entails an incrementalist approach to scientific change, and so denied that the incremental reform that Popper favoured in social change is isomorphic with Popper’s own conception of the process of natural science. I think that my own early chapters have provided good reason to dismiss this view of Freeman’s. Freeman’s claim is that what Popper recommended in science is an act of revolutionary valour by way of falsification or error elimination and bold new conjecture, and this is contrary to the piecemeal change he favoured in social transformation.

I have argued by contrast that Popper’s anti-revolutionary dispositions acutely inform his philosophy of science, in ways that make what is ‘bold’ appropriate and helpful precisely from its being *courageous* and only when it is courageous. Courage, I have argued, would not be possible in outright revolutionary change, since courage requires significant conservation of values. True revolutionaries overturn so much that their boldness can only be rash, not truly courageous. This is the implicit burden of a strong anti-revolutionary disposition in Popper. Popper consequently downplays the extent to which any bold new conjecture in natural sciences outright ‘revolutionises’ its field. (Popper sharply contrasts with Thomas S. Kuhn.)

It is important to note that Popper himself asserted that “there are a number of common ideas” (Popper 1973: 79-80) between his science and politics. Michael Freeman (1975) disputed whether there is this connection between Popper’s philosophy of science and his political philosophy, but Freeman was mistaken to do so.

Popper gave thematic significance in both his philosophy of science and his philosophy of politics to the critical method of falsification or error elimination (conjecture and refutation), together with rationality, fallibilism and openness. At the same time, Popper personified as ‘an’ engineer the reformer who would work in trial-and-error spirit by a piecemeal approach. This emblematises Popper’s consistent balancing of individual and social aspects in his philosophy.

My aim in this chapter is not to delve any further into the controversy of whether or not Popper’s philosophy of science and political philosophy are mutually supporting. I aim to evaluate Popper’s piecemeal engineering as a model for achieving social and political change

when *major* social and political change is necessary. The parallel evaluative question concerning natural science would be whether conjecture and refutation can drive, in real time, ultimately very major needed intellectual change. However, because I wish to consider the scale and speed of social change that is needed in less developed nations, nations that are often riven by corruption, my evaluative question concerns whether piecemeal engineering is competent to such tasks. I shall briefly contextualise this study to Africa, where the scale of socio-economic and political change that is both needed and needed quickly is vast, and where corruption is rife-social and pol in countries where foreign interests have come to extract oil. By discussing first in philosophy of science why I believe Popper's method can quickly accomplish intellectual change, I shall also defend the value of piecemeal engineering for social reform even of deeply troubled nations such as those in Africa. However, I will defend the need for many-pieces-at-once reform when the needs are urgent enough, despite the fact that this would blur somewhat the empirical learning that would be accomplished.

I agree with Popper that piecemeal engineering is a requirement for epistemically most-responsible peer review and social learning, and so also for the most careful variety of social transformation. Partly in terms of "many-pieces-at-once" social engineering that varies Popper's prescription somewhat, I shall argue for the following four points:

1. that one-piece-at-a-time piecemeal social engineering is liable to be too slow when radical institutional changes are needed;
2. that, since a significant change (cause) is required in order to achieve a noticeable consequence (effect) in social relations, small one-at-a-time piecemeal changes would often not change society noticeably;
3. that the magnitude of the situation often requires that social reform be undertaken many-pieces-at-once;
4. that while Popper's one-piece-at-a-time piecemeal social engineering seems sensible where societies are already deeply developed, societies that are less developed require faster, much more sweeping political change, that consequently will be "many-pieces-at-once".

## **Understanding Piecemeal Engineering**

Officially according to Popper, the piecemeal engineering approach is the introduction of modest changes to address specific problems, and modest implementation of progressively

modified steps or policies in response to the observed consequences of those interventions. Piecemeal engineering involves small scale intervention to deal with social issues, and to see whether they are producing their intended effects, and to find ways of mitigating any unintended consequences. It is therefore a trial-and-error approach to learning that seeks to refine interventions based on that learning.

For Popper, the way to disentangle causes and effects is to avoid undertaking reforms of too great a complexity. Popper insists that it should always be possible to know the effect of the changes we have introduced in social reform. In Popper's estimation, by pursuing a sweeping social change, one would make it very difficult to determine exactly which aspect of the intervention is having the most influence. Yet Popper insisted that our concern needs to be with understanding causes and effects, for that is how we can be duly tentative, and fallibilist, concerning our steps. We would otherwise have no way to learn from our mistakes. So, without disentangling causes and effects, one would be in confusion concerning whether any intervention attempted was contributing to or thwarting a desired social transformation. Therefore, the epistemically responsible way to achieve a desired end is to approach social problems piecemeal. Sweeping grand scale change is epistemically irresponsible and as likely as not will, relative to what one aims to accomplish, be destructive rather than helpful.

Two commentators who understand that Popper's idea of piecemeal engineering expresses his approach to obtaining knowledge in natural science are P.D Shaw and Gurol Irzik (1955- ). Irzik interprets Popper as insisting upon the maxims (a) change as few variables as possible, and (b) make quantitatively small changes. Mindful of the scale and pace of change that is needed in a developing country such as his own native Turkey, Irzik criticises and rejects both maxim (a) and maxim (b).

Both Irzik and Shaw characterise Popper's piecemeal engineering as directly expressing the falsificationist idea that experimental science progresses through trial and error. How we learn from our mistakes, recognise our errors and utilise them critically (Popper 1957: 87), is crucial to Popper's proposed method of social transformation. The claim here is that in a typical liberal society it is straightforward to detect social problems. Then by trial and error it is possible to assess policies aimed at solving the problems. Relieving society of a condition that every rational person agrees is a problem is by a process of experimentation analogous to that employed in natural science.

It is on the basis of the above claim that I shall examine the possibility of looking at Popper's piecemeal engineering as a scientific method. However, it is important to first evaluate the plausibility or otherwise of engineering science itself being piecemeal. In providing this analysis, I shall neither here indulge in differentiating the methods that are used in various engineering fields of study nor would I differentiate between on the one hand, an applied scientist (a.k.a. 'the engineer') and on the other hand an 'experimental scientist'. I am aware that engineering projects are not experiments but aim to draw on the considerable body of existing theory and established practice. However, the project itself must be approached in a manner that allows for some degree of experimental adjustment to the contingencies of particular environments and conditions.

### **Is Engineering Science Piecemeal?**

It is difficult to determine if most philosophers, especially Popper, possess an account of applied theoretical knowledge that engineering science is known to be. To most philosophers, engineering is just an application of theoretical tentative presumed knowledge. Of course, since Popper professed that we have no evidence *for* our theories, he seemed to have found it difficult to explain why we should apply theoretical tentative presumed knowledge in the way that we do. Popper is theory-obsessed, just as most philosophers are theory-obsessed. It is not clear if Popper had a good understanding of experimental science. This is because Popper focused too much on theory and the testing of hypotheses, thereby failing to acknowledge ways in which the practical, experimental side of science has an intellectual life of its own.

Actual engineering science practice is in many domains based on a code.<sup>31</sup> The code bears some relation to the sciences, such as physics. But it is also strongly conditioned by practitioners' convenience. You could even adopt a John Rawls (1921-2002) like characterisation of how it is that a code may be made out as fair (if it is fair) or unfair (if it is unfair). Actual engineering culture is careful by being conformist. Engineers demand their own and one another's conformity to codes. For example, there is a code for how you would calculate the strength of a way (say by using bolts) for connecting one element of steel to another. This would involve simplified approximate assessments of six or seven different ways that failure is possible, checking that the strength against each of these possible modes of failure

---

31 This knowledge of how actual engineering science practice works I got from my discussions with Philip Catton who transitioned from the field of philosophy to the study of civil engineering.

is more than load demand, even taking into account a generous factor of safety. An engineer who has designed according to code *is* right, the engineering community will think, since engineering as a field is careful by demanding code-conformity. And yet, the code itself may eventually be acknowledged to stand in need of revision or extension or other improvement. Science is not much present in the code which is all about approximation for ease and quickness of calculation, but science becomes in some ways relevant at those occasions when the code is under review, and engineers are deciding how best to change it. This puts theory at the very least at arm's length from practice, and Popper I think did not know much about this. Most philosophers seem ignorant of the working of practical fields, such as engineering.

Clearly, Popper did not seem to have a good understanding of how engineering culture works in practice. However, it is instructive to say that Popper's anti-revolutionary stance on social reforms is indicative of how he was able to adopt the conformist nature of engineering science. Popper seemed to have used the feature of engineering science about cross-checking possible modes of failure along the same way to endorsing his idea of piecemeal engineering as a way to evaluate the steps in order mitigate mistakes along the way. It is the same fallibilism that Popper emphasised in his piecemeal engineering approach. This may account for Popper's use of the term "engineering" to describe how the practical application of social reforms can be piecemeal. Although the method of engineering science may not be piecemeal, which was why Popper noted that there are "objectionable associations attached to the term engineering" (Popper 1957: 21), its heuristic nature involves making small changes in order to evaluate the steps taken. This is the approach that Popper also proposed in addressing social problems.

If engineering science is the creative application of scientific knowledge and skills to scientific, social and economic environments in order to design and also create structures, machines, devices, systems, materials and processes, it is this underlying processes in engineering science that Popper wishes to adopt. So, when Popper used the word "engineering" to describe his piecemeal changes, he was interested in such engineering attitudes as that of completing a design by successive approximations, of making small changes at a time, and of retracting steps as well as exploring alternatives when failure occurs.

It is with this perspective that we can say that Popper used the term "engineering" to ascribe to the piecemeal engineer, technologist or scientist the responsibility of one who identifies the

problems at hand and begins to take a series of incremental steps to finding solutions to it. The engineer looks at an engineering design process, for instance, identifies a problem, say how to build something (e.g. skyscraper, amusement park ride, bicycle, or music player). He/she gathers information and conducts research to understand the needs of the challenges to be addressed. Together with his/her team of engineers, they brainstorm many imaginative but potentially practical solutions. They select the most promising idea and embark upon a design that includes drawings, and analytical decisions on the materials and construction, manufacturing and fabrication technologies to use. They create and test many prototypes, making improvements, analysing possible errors, learning from their mistakes until the product design is good enough to meet their professional needs.

In all of these steps, what the piecemeal engineer demonstrates is that the scientific process is a consciously designed one where engineers formulate the results of their designs in the form of hypotheses. They are able to identify the effects of the changes introduced because of the small adjustments and readjustments processes taken. The result of these small changes gives the engineer more information regarding which variable next to change and how much to change it. This is the view that underwrites Popper's endorsement of piecemeal engineering, and which possesses such a neat fit with the account of science as conjectures and refutations. However, Popper's idea of piecemeal engineering is only a method for solving social problems, and it is different from the test of hypotheses in science.

### **Piecemeal Engineering as a Scientific Approach**

Irzik (1985) critically discusses Popper's idea that the scientific approach of conjectures and refutations dovetails with his endorsement of piecemeal engineering. Popper contended, Irzik believes, that the method of changing the smallest possible number of variables in a piecemeal manner can aid in recognising the consequences of these changes. That, then, according to Popper, represents an epistemic reason to be a "one-piece-at-a-time" piecemeal engineer. Irzik's claim however is that while "one-piece-at-a-time" piecemeal engineering can facilitate error elimination, and can help us know the effects of the changes that we have made, it cannot get very much done within any reasonable amount of time. If, on the other hand, out of a need to accomplish considerable change in real time, we manipulate several variables at once, then, since the consequences will be a joint outcome of those multiple changes, it will often be

extremely difficult to tell the role of each factor in producing these consequences. Moreover, some of these consequences will probably be undesired (Irzik 1985: 3).

I grant to Irzik that Popper is in a bind, here. Popper hoped that his epistemology would supply him with good reasons to be anti-revolutionary, but he took this to an unacceptable extreme. If you consider a country such as Irzik's native Turkey, where there are a great many social problems, upon which one would surely want work done many-pieces-at-once, then you don't have to be pro-revolutionary simply to want a good pace of improvement in real time. If Popper's epistemological point argues against this, then, so much the worse for a merely epistemological point: there are other values to be satisfied than those that surround knowing with greatest clarity and inquiring with greatest methodological control. One may depart just a little from Popper and suggest that the researcher, by using the piecemeal, trial and error approach, may after all manipulate more than one variable at a time, and still may exert some attempt to control other variables or measure change in other variables. Some conditions for ideal controlled experimentation would not obtain, but the rationale would be that the pace of needed change cannot allow researchers what would be ideal conditions for them, conditions in which they manipulate one variable only, and control the rest of the variables within a controlled environment.

Whether the ideal experiment would involve a control group, where the subjects have been randomly assigned between the groups, and the researchers' only tests for effects following one change at a time, is in any case open to question. Society is not like the topic area of some well-defined branch of natural science. Society is highly dynamic and highly ramified and complicated. How researchers could know with greatest clarity the errors they have committed (when they think that a change that they can make will prove salutary and in fact it produces worse ill effects) ostensibly would be for one change only to occur at a time. Society, however, won't allow for this anyway, even if the social engineer wants to follow such a one-change-at-a-time experimental method. Society will change at a significant pace and quite complexly, whether the social engineer orchestrates change or not.

Irzik rightly points out that this approach of changing as few variables as possible is especially applicable in experimental designs using controlled variables and randomisation. It is also applicable where systematic tests can be carried out in classical experimental studies designed to isolate the separate effect of one variable on another (Irzik 1985:3). Outside the special

context of controlled scientific experimentation, it is difficult actually to achieve this piecemeal approach that Popper recommended to us. Yet Popper's piecemeal engineering approach could be combined with the techniques of regression analysis that social scientists use to carry out non-experimental research. The social scientists' aim is usually to infer from statistical data how an observed change in one variable is related to the separate changes in other variables operating simultaneously on it (Irzik 1985:3). What this implies is that social scientists use regression analysis to gain an understanding of co-variation where they may not have full control of variables. 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 this 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. By identifying causes, the engineers can then attempt to have greater control of outcomes in later experiments. Irzik has helped me to see that this approach can, pace Popper, be many-pieces-at-once. But I insist that the many-pieces-at-once piecemeal social engineer who is seeking to learn from mistakes made is no holistic designer or revolutionary conformist to the bulk of what Popper had in mind.

Irzik has interpreted Popper's piecemeal engineering as directly expressing scientific method. We must acknowledge however that, in every scientific inquiry, hypotheses or theories are tested in bundles. A given hypothesis or theory can be tested only by combining it with auxiliary hypotheses. (The French scientist and philosopher Pierre Duhem has importantly clarified and demonstrated the point in question about science. A standard illustration concerns the case of celestial mechanics in which where Uranus will be seen against the background of the fixed stars depends upon a complex of hypotheses. When scientists could not fit Uranus's orbit into their Newtonian models they did not blame Newton's laws, but rather they blamed some of the further needed assumptions that were required before they could predict Uranus's motion at all. It was fruitful for them to adjust their auxiliary assumptions, for in the manner of their doing so, Neptune was discovered, that is, a planet was discovered whose gravitational influence on Uranus the earlier auxiliary hypotheses had simply not taken into account.) The auxiliary hypotheses at play in such inquiry need to be independently tested and testable. In testing these hypotheses scientists proceed through a piecemeal approach (and certainly not a wholesale approach) and this simply is the scientific method.

For all this, Shaw's and Irzik's interpretative claim that Popper's piecemeal engineering expresses nothing but Popper's conception of the scientific method misses some points. Although Popper's piecemeal engineering uses conjectures and refutations, its orientation is social: piecemeal engineering seeks means to ameliorate an acknowledged social problem. As a method for solving social problems it concerns means/ends, and not hypotheses alone. By contrast Popper treats the testing of hypotheses in natural science as a purely intellectual concern. Any practical upshot would come later, as something fully separate, in Popper's view, from the advancement of theoretical knowledge. Though the methodologies of natural science on the one hand and social engineering on the other hand look alike, they are on this point completely different. Though Popper used the word engineering to describe a systematic elucidation of measures for proper social reform, the term 'piecemeal engineering' is not synonymous with 'the experimental process' in natural science. The practical intent of piecemeal engineering is an inseparable part of its meaning. Piecemeal engineering, that Popper desired, is the actual manipulation of society under an aim that society shall be reformed.

Moreover, we should be mindful of the fact that while there are well established laws of physics that the structural engineer or the physical scientist takes into account, there is much more controversy regarding the "laws of social dynamics" if indeed there can be any such thing. In fact, thoroughgoing laws of science responsible for making necessary scientific claims are not sufficient to understand the dynamics of the social environment. Although one would like hypotheses to be tested where possible, wanting as policy that society should be reformed in a given way itself has little to do with methodology in science.

So for Popper, piecemeal social engineering is done in the real world in a particular, inevitably complex, social context. In this context the social engineer hypothesises that doing X is a way (or is the best way) to bring about end E. For example, end E might be to improve public health, and the hypothesis might be that this is best brought about by doing X, where, say, X = educating people about the effects of drinking untreated water. The point is that the engineer does not merely hypothesise, or adopt means for testing the hypothesis. On the contrary, the engineer also seeks to get something done, vis., to improve public health.

The engineer's means-end hypothesis is nevertheless open to test, and it might come out to be true or false. The ways that one might use to test such a hypothesis are more various than either

Popper, or with him Irzik, take into account. One way to test the hypothesis would use a control group that is randomly assigned and left innocent of X, with a contrasting experimental group subjected to X. This would be more like random clinical trials (RCT). With the data from such an RCT, one could effect a regression analysis, towards shaping a new hypothesis, should the originally proffered hypothesis fail. Since such RCT needs less stringent conditions than the conditions that either Popper or Irzik suppose would be demanded by piecemeal engineering, I believe that the spirit of Popper's idea of piecemeal engineering would be satisfied, even if the one-piece-at-a-time circumspection in his approach is refused. Many-pieces-at-once social reform can count as piecemeal engineering, I will insist.

### **Piecemeal Social Engineering as a Method of Changing Society**

As a method of changing society, Popper's piecemeal social engineering involves performing small scale reforms aimed at determining how public policies can produce demonstrated social benefits when the principle of negative utilitarianism is applied. Negative utilitarianism involves the view that the aim of public policy is to alleviate indisputable suffering rather than to promote happiness. Whatever happiness even amounts to is subject to dispute. Partly for that reason, the means to bring better happiness about would be contentious, and would not easily be susceptible to empirical test. These are reasons why Popper considers the (positive) utilitarianism of Mill to be potentially a vehicle for dogmatism. Popper advanced negative utilitarianism as a way to steer between dogmatism and scepticism (or moral nihilism). Negative utilitarianism requires us to promote the least amount of evil or harm within the means by which we seek to address the greatest amount of suffering for the greatest number. Popper's idea is that governments should respond piecemeal to recognised social ills – to whatever is widely acknowledged to be harmful to the people. So a government's application of piecemeal methods will be trial-and-error attempts to mitigate these acknowledged harms; and when those urgent evils of society are dealt with piecemeal, it is with a view to best learning from one's mistakes.

Any revolutionary attempt to restructure society through large-scale social planning Popper viewed as a pernicious consequence of historicism. Conversely, Popper viewed the preference for piecemeal social engineering as protection against totalitarianism. Whereas historicism and holism/large-scale social planning or utopian social engineering all define direct roads to totalitarianism in Popper's view, commitment to piecemeal social engineering as a model for

social reform confers safety from that eventuality. Precisely by fostering criticism, the prescription to do social engineering piecemeal is opening of society rather than closing of it. Utopian/holistic/large-scale social planning, Popper claimed, requires the centralised rule of a few, the suppression of dissent and, ultimately, the use of violence instead of reason to settle the disputes that arise in the pursuit of the ultimate goals of the large-scale planners. The way that Popper rejected such totalitarian ways draws inspiration from the conservatism that the piecemeal approach signifies. Popper's reasons for conservatism or against revolutionary fervour in social reform are essentially Burkean. In favouring the Burkean point of view, which emphasises caution in making social changes, Popper foreswore revolutionary behaviour in politics. The particular qualities of Popper's liberalism all have a basis in this Burkean view. Piecemeal social engineering, Popper argued, gives room for democratic ideals, the tolerance of dissent and the use of reason and compromise to settle political disputes (Popper 1945: 157-168).

Popper provided three basic arguments against utopian/holistic social engineering. These arguments can be found in both *The Open Society and Its Enemies* vol. 1, chapter 9, entitled: "Aestheticism, Perfectionism, Utopianism"<sup>32</sup>, and *The Poverty of Historicism* section 21, titled: "Piecemeal versus Utopian Engineering".

The first is that the utopian's aim is to restructure the "whole of society in accordance with a definite plan or blueprint" (Popper 1957: 66). Popper's position is that unlike a piecemeal social engineer who looks at the social issues and senses that the best method of re-designing society is addressing those issues in small adjustments and re-adjustments with the possibility of further improvements, the utopian's attempt at using a definite plan or blueprint to address social issues as whole requires "a strong centralised rule of a few, and ... therefore is likely to lead to dictatorship" (Popper 1945a: 140).

The second argument results from the first. As a result of the dictatorship arising from the implementation of the definite plan or blueprint of the utopian, the difficulty would be to measure effects of the transformation agenda within the society. Since dictatorship does not take kindly to criticism, "the benevolent dictator will not easily hear of complaints concerning

---

<sup>32</sup> In the original version of *The Open Society and Its Enemies*, chapter 9 was entitled: "Aestheticism, Radicalism, Utopianism". However, in the fifth edition of the book (1966) Popper changed the title to: Aestheticism, Perfectionism, Utopianism. The ideas in both versions remain unchanged.

measures he has taken” (Popper 1945a: 140). Rational criticism or feedback on the measures of the dictator’s social reform is discouraged and complaint would be suppressed at all cost. The piecemeal engineer, on the other hand, understands his fallibilism. “The piecemeal engineer knows, like Socrates, how little he knows” (Popper 1957: 67). He understands the importance of rational criticisms and feedback. He understands that there are unintended consequences that arise out of a holistic social reform. Consequently, he knows that the best way to achieve an expected result is to address reforms step by step, trial and error, bits and bits in order to avoid unintended consequences of any reform.

The third argument against Utopian engineering also results from the second and the first. This is what Popper refers to as “the problem of dictator’s successor” (Popper 1945a: 141). Popper’s concern with the Utopian engineer in this regard is that, in all of the benevolent dictator’s doing to suppress rational criticism and critical feedback on the reforms he has undertaken, it is improbable or virtually impossible that he will attain the height to which he had set for himself to realise the ends of his reform during his lifetime. The difficulty for the Utopian engineer then becomes the ability to find “an equally benevolent successor” (Popper 1945a: 142). The shame is that the successor may not be too keen or very much disposed to pursuing the same ideal or disposition as the predecessor, and then all the suffering imposed on the people for the sake of the ideal may not have worth their sacrifices.

With Popper’s arguments (which clearly set apart piecemeal social engineering from utopian social engineering), I think Popper is right that the open society, where piecemeal social transformation holds sway, is far superior to tribal or closed totalitarian regimes. To Popper, tribal or closed societies very often base their social transformation agenda upon utopian/holistic social engineering of remodelling the whole of society at one sweep. This view underwrites Popper’s anti-utopianism and his negative utilitarianism. With the principle of negative utilitarianism, Popper’s aim is that the amelioration of suffering of the citizenry can be better achieved through a bits-and-pieces approach. This is why he favoured changes in piecemeal fashion backed by a trial and error method to avoid the unforeseen side effects of any large-scale change.

Although Popper’s approach signifies a careful setting down and articulation of clear goals in the social transformation process, the viability of piecemeal social engineering in changing society needs to be questioned. Unlike in natural science where there is the possibility of

controlling and manipulating as few variables as possible, it is quite a difficult task to have adequate social science knowledge to inform us of a major and simultaneous experimentation and to be able to monitor all causes and effects. The difficulty in monitoring a strong causal nexus in the society results from the complexities of social relations. One of these complex interactions is how the “free Market” can be skewed by government intervention. However, according to Popper, government intervention is not always wrong as long as it is within the confines of law (Popper 1945a: 125).

Although sociologists often attempt to explain social causes and effects in terms of changing variables, developing an empirical basis for the presumed social causal nexus is hard. This is because the task of confirming that an effect is a result of a cause in social relations requires that we isolate one cause and one effect, and confirm beyond reasonable doubt that the effect is as a result of the particular cause. To achieve success in such confirmation would mean that any noticeable effects require bold significant causes. In other words, given the complexities in society, it would require a significant change (cause) to achieve noticeable consequences (effect). The reason is that the “magnitude and the scope of the change to be introduced *in changing society*”<sup>33</sup> cannot be decided in an a priori way, but depends on the nature of the case” (Irzik 1985: 5). For this reason, it would be difficult to see what effect small piecemeal institutional changes can have in achieving noticeable consequences in changing society.

### **Towards Social Engineering: Piecemeal or ‘Many-Pieces-at-once’?**

In my own evaluation of Popper’s piecemeal social engineering, notwithstanding my criticisms noted in the preceding section, I largely endorse Popper, albeit that I consider that social engineering must often be mounted many-pieces-at-once. I have considered reasons why many-pieces-at-once social engineering can still be *piecemeal* social engineering. As a result of the complexities of social interaction, the magnitude of the situation often requires that social reform be undertaken in a more radical manner. This radical (or many-pieces-at-once) social engineering is plausible when we consider that the causal nexus in social relations depends on the ‘logic of the situation’ or the existence of real social-causal mechanisms linking cause to effect. In other words, since social cause and effect are determined by how people’s behaviour

---

<sup>33</sup> Emphasis is mine.

affects the course of events, then the degree of social reforms would be determined by the consequences of social situation.

I agree with Popper that piecemeal social engineering would promote necessary institutional checks and balances. I also agree that it would make the government more responsible to the people, increase equality and help a government respond to recognized social ills – to whatever is widely acknowledged to be harmful to the people, by making only small quantitative changes by trial and error. The modification I make to Popper is to argue that social reform may need to be many-pieces-at-once social engineering depending on the nature of the circumstances. In fact, what Popper termed as the ‘logic of the situation’ is apt in this circumstance and can be used to justify the concept of ‘many-pieces-at-once’ piecemeal social engineering. Consistently with Popper’s view that the ‘logic of the situation’ means that different circumstances will determine the type of piecemeal engineering required. In some circumstances A, X piecemeal engineering may be adopted, in B circumstances, Y piecemeal engineering may be adopted, and in C circumstances, Z piecemeal engineering may be adopted and so on. So the logic of the situation is about piecemeal engineering (in kind or degree or numbers such as a different policy to address security issues or tackling security issues as well as health or economic issues simultaneously). The situation analysis can allow social reform to be considered in terms of the magnitude of the case or reforms needed at every point in time. The logic of the situation requires that we analyse the situation that makes an agent act the way they act before we pass value judgements. In this case, the magnitude of the case would determine the scale and the speed of social engineering that is required; it may either be piecemeal or ‘many-pieces-at-once’ social engineering.

Popper was emphatic that social institutions should be altered in a piecemeal fashion only so as to avoid the perils of a holistic reconstruction of a society in one sweep. However, he was not naïve that reforms may require a more drastic social reform. He was only being cautious of a radical holistic social reform process. Clearly, with the description of piecemeal social engineering that Popper gave in *The Poverty of Historicism*, it appears that as a backdrop to his work on piecemeal social engineering, there is an assumption about the kind of society in which the people whom he was addressing lived. In a lecture, “Freedom: A Balance Sheet” Popper stressed that “Western democracies are the best of which we have knowledge. . . never before was there a society in which common men were so much respected as in ours, in which there were so few who are downtrodden and insulted” (cf. Shearmur 1996: 32). It appears that

piecemeal social engineering only seems most sensible where societies are already deeply developed and ideals of moderate liberal political thought are well established. It also appears that the pre-conditions of applying piecemeal social engineering are that the society itself would be liberal and economically developed. The assumption here is that since the society that Popper is addressing is already developed, all that is required is the making of small adjustments and readjustments which can be continually improved upon. Consequently, if we accept this assumption that piecemeal social engineering works better in a society that is already significantly developed, it therefore implies that the piecemeal social engineering approach may not accommodate the worst-off/most impoverished kinds of society even if they are liberal. By this estimation, piecemeal social engineering may be best suitable only for developed societies, and appears to ignore the challenges to social transformation facing less developed societies.

Although the above assumption may not be what Popper intended, even when he appeared to have said that Western societies are the best in this respect, he did not say they were the only ones. This implies that less developed non-Western societies can also adopt piecemeal strategies. Even if it appears that there is a disparity regarding to which societies piecemeal social engineering is most applicable, it does not imply that reforms in both developed and less-developed societies do not have to go on many-pieces-at-once. The magnitude of social reforms to be undertaken in developed societies may differ and be less thoroughgoing from that which is needed in less-developed societies. A one-piece-at-a-time piecemeal method may be appropriate for a society which is already developed for instance, in urban transportation, medical care and health technology, telecommunication and information systems, road infrastructures, power and energy, and standard educational system. However, the case is most certainly different in a society that requires a faster approach than what the one-piece-at-a-time piecemeal method (that Popper endorses) can offer in response to the challenges of development and modernisation.

The fact here is that Popper's piecemeal social engineering is intended to improve public policies and to promote the values of freedom, individual rights, individual self-determination and tolerance as they become the key features of an open society or liberal democracy in developed societies. However, Popper offered no explanation of how piecemeal social engineering can help social reform and promote efficient public policy in other democratic societies where corruption and underdevelopment still hold sway, like societies in Africa. In

other words, piecemeal social engineering seems quite inadequate to deal with the scale of problems facing less developed nations which have not gone through the same process of social change or evolution that led to the rise of the Western liberal individualist – market model of society.

I acknowledge that the democratic and fallibilist aspect of Popper's piecemeal social engineering would go a long way in defining the path that ideal social transformation ought to take. While one is not in doubt that piecemeal social engineering can suitably address social problems the slow progress it may record is contentious. My contention is however that making small quantitative changes may be too slow for a society that requires a radical transformation in order to keep pace with the rest of the developed world. The process may be too slow to significantly contribute to radical institutional change. The case is strong, and I rehearse this argument also for developed societies that also need to address, for instance, the insatiable and enormous social problems of urbanisation, mass transportation, road traffic jams and smog, medical care and educational systems. My position here is that the piecemeal social engineering that Popper's liberalism endorses may delay progress and limit social change to a snail's pace.

Consider the following examples of social problems: It remains to be seen if the appeal to making small changes involved with seismic retrofitting, for instance, for a city which needs rapid development would yield a great number of supports for the approach. Similarly, a piecemeal response by a government to high unemployment, hunger and poverty in a society would not only fail to alleviate immediate short-term crisis, its long-term problem may become hard to manage. Taking a piecemeal engineering method to address security issues such as counter-piracy, such as the Somalia piracy crisis, instead of a comprehensive intervention would not only under-address the problem; it may generate new and greater problems. A society, for instance, which needs to establish infrastructural projects such as a high speed train system to improve transportation for its growing population, wind or nuclear energy for power, and improved healthcare technology, would rather consider a radical engineering approach, when if this is done rapidly it might also bring about tangible benefits to the economy. China, Japan and South Korea<sup>34</sup> are examples of emerging economies that are making rapid progress in manufacturing and factory automation, whose economic growth can be said to have been

---

34 These emerging economies are certainly also generating massive social and environmental problems at the same time as extremely rapid economic growth is pursued. Adequate solutions to addressing these environment issues can also be addressed 'many-pieces-at-once' depending on the magnitude of the situation.

assisted by ‘many-pieces-at-once’ social engineering. In general, piecemeal social engineering is likely to lead to numerous problems such as inefficiencies, slow information transfer, high cost of services, unreliability, and consequently, delays in social transformation.

The thesis that I defend, therefore, is that social change should be managed many-pieces-at-once. I endorse Popper’s piecemeal social engineering, provided that included under it is critical, tentative, non-dogmatic, many-pieces-at-once social engineering. Many-pieces-at-once social engineering is a more realistic description of how liberal governments in a democratic society work. 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. In this approach to reform of, say, a building (a bungalow, let us say), one can change the roof, plumbing and electrical. If one changes just the roof it is one-piece engineering, and if one changes the roof plus the plumbing it is two-piece engineering, if one changes the roof, plumbing, electrical it is three-piece social engineering, and if one changes the roof, plumbing, electrical, ceiling, parts of the wall then it is many pieces engineering. These are changes that target the “content” or “substance” of the building, and not the structure or foundation of the building. Even if one decides to do a wholesale change, (not one-piece, two-piece, three-piece, many pieces and lots of piece) by taking the entire building (bungalow) down and starting from the foundation, and by erecting another building (a skyscraper, etc.), this is changing the “structure” of the society, one still needs to change it many-pieces-at-once in order to mitigate any unintended consequences. So, it is a different building entirely or perhaps with more floors, rooms, compartments and with different foundation. This does not require any wholesale change or revolution. The planning and strategy that are involved in changing the structure of society also

require many-pieces-at-once. The examples of China, Japan and South Korea, which are instances of emerging economies who are making rapid progress in manufacturing and factory automation, are countries that have changed the structure and content of their societies been assisted by ‘many-pieces-at-once’ social engineering. These countries or economies did not go through a wholesale reform or revolution. The structure or foundation of these societies were not changed (in one fell swoop), rather it is their “contents or substance” that were changed or are being changed.

With many-pieces-at-once social engineering, like Popper’s piecemeal social engineering, while there may be costs from this in terms of how feasible it is to learn from mistakes along the way, the scale of the problems may require this approach. The magnitude of the problem, for instance, in the recurring problems of poverty, injustice, electoral fraud, unemployment, diseases, corruption, police brutality, bad leadership, lack of the development of science and technology and general underdevelopment that confront most developing nations, particularly in Africa, would require faster, more sweeping political change than can be done in bits-and-pieces. However, vigilance is needed, in agreement with Popper, to detect whether the measures work, and whether they work without side-effects that are as negative as the ills redressed. Caution is also required to see that this radical socio-economic and political change is not informed by large-scale social planning as it may lead to totalitarianism. It is essential that piecemeal engineering that addresses many problems simultaneously is still accountable to the people’s assessment, rational criticism and feedback regarding whether the reforms work. The need for critical feedback that Popper stressed where everyone would have a say, including ordinary people, as well as including the elites, is important for the evaluation of how the reforms work. The evaluation may perhaps be difficult to accomplish, but the possibility of criticism must remain, in a way that is precluded when totalitarian regimes prosecute utopian central management of everything in society.

## **Conclusion**

I conclude by noting that the notion of ‘many-pieces-at-once’ social engineering that I defend is distinct from the idea of large-scale reform. Although one can have rapid social change where there is good evidence regarding the means-ends effect sought, for instance, about having a comprehensive reform of the health system or the introduction of social security or pensions for all, the results of such in large-scale social planning would be difficult to monitor. Through

Popper's conjecture and refutation approach one could pick the right variables to change to promote social ends, one can 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 planning would bring about.

In order of words, if for instance, we say that the notion of:

'Many-pieces-at-once' piecemeal social engineering= A.

Effects of reforms= B

Unintended consequences= X

The argument is that it is still possible to monitor the significant consequences of (B) within the context of (A). However, in the process of monitoring the significant consequences of (B) there may arise some inadvertently damaging (X). The only way one may identify the unintended consequences (X) is by careful monitoring of means-end hypotheses linking A and B.

My way of thought is that 'many-pieces-at-once' social engineering can be suited to a number of different political positions. It can be either right or left wing. It could be very liberal or communitarian, capitalist or socialist, but may not be communist since it is not intended to be carried out as a result of a revolutionary dictatorship or large-scale central planning.

The concern is that large-scale planning or central decision-making is usually insensitive to individual autonomy, socio-cultural and also environmental factors. The conception of having a more localised level of decision making which interconnects with some level of individual autonomy would promote a critical rationality where critical feedback arises from monitoring effects of piecemeal, but 'many-pieces-at-once' social reform. This process ensures that there is an adequate demarcation between individual autonomy, which allows individuals to present their views and give critical feedback, and the autonomy of the state in carrying out the societal reforms it is constitutionally empowered to implement. The concern about large-scale social planning or centralised policy is that there are usually a small number of people that design plans or reforms that are meant to affect the entire citizenry. Since central planners or large-

scale social planners are usually dictators who do not take kindly to criticism, as I mentioned earlier regarding Popper's second argument against utopian social engineering, the reform loses the critical rationalism which is available from the citizenry. The critical feedback that is available from all those people that actually engage with their world is not entertained. So there cannot be a critical rationality if there is no freedom. It is on that basis that I examine in the next chapter Popper's conception of freedom.

In all of this, I emphasise that the notion of 'many-pieces-at-once' social engineering as a modification to Popper's piecemeal reform questions all forms of large-scale social planning or central decision making which suppress the possibility of individual autonomy and critical feedback from citizens. Among other things, 'many-pieces-at-once' social engineering emphasises a structure which has links to different levels of autonomy, and that each level is allowed to implement its function without impediments or external constraints. Individuals have their particular duties to the state, and even within the state, local government roles are different from those of the central government.

More often than not, both in democratic and non-democratic societies, the central governments have effective control of local governments. The rationality of large-scale planning or centralised decision making is the need for strong leadership. However, the downside is that central governments usually do not possess the very competence and information about local issues. Admittedly, there is need for strong leadership or coordination in government whether at the central or local level. However, the extent to which such coordination is one of an intelligent social level, and the extent to which it is dictatorship of one small part of the rationality, is disputable. Whichever side the argument goes, no rationality of centralised decision making which promotes large-scale social planning at the expense of individual freedom and critical feedback is correct. A valid argument is one that promotes a kind of reform, such as the 'many-pieces-at-once' social engineering, which is based upon freedom, critical feedback and critical rationalism in the sense that allows the mitigation of unintended consequences that may arise out of the very social reform.

## Chapter Seven: On Karl Popper's Concept of Freedom: Individual and Social Aspects

*The freedom we enjoy extends also to ordinary life; we are not suspicious of one another, and do not nag our neighbour if he chooses to go his own way ... But this freedom does not make us lawless. We are taught to respect the magistrates and the laws, and never to forget that we must protect the injured. And we are also taught to observe those unwritten laws whose sanction lies only in the universal feeling of what is right.*

*(Popper 1945a, chapter 10: 163)*

### Introduction

In the previous chapter, I examined Popper's piecemeal social engineering as an alternative to utopian/large-scale social planning. Utopian/large-scale social planning, Popper claimed, requires the centralised rule of a few, suppressing dissent and, ultimately, producing the use of violence to compel public acceptance of the goals and policies of the large-scale planners. Piecemeal social engineering, on the other hand, enhances tolerance of dissent not less surely than utopianism produces intolerance. Piecemeal social engineering requires use of reason to dissolve political disputes. It typically produces compromise. Consequently, piecemeal social engineering fosters democratic ideals (Popper 1945a: 157-168). I argued in the previous chapter that Popper's conclusions are sound and that they follow even if one understands piecemeal social engineering to include a concerted, many-pieces-at-once, enhanced-pace approach that nevertheless is a far cry from totalitarian, large-scale or utopian planning. I agree with Popper that totalitarian societies, by their nature, are accompanied by large-scale planning. Conversely also, dedication to large-scale planning paves the way for totalitarianism to develop. Insistence upon piecemeal social engineering is the way to maintain democracy and freedom. With Popper, my previous chapter maintained that only by sustaining freedom can people hope to remain secure.

The present chapter concerns what Popper meant by 'freedom'. I will again argue that Popper achieved a balanced perspective. On a common liberal understanding, freedom is largely a negative concept, concerning absence of coercion or constraint. To adopt this concept is to steer clear of an opposing positive concept of freedom. This may seem reasonable in exactly the way that it is reasonable to be shy of utopianism, or shy of large-scale planning, or shy of totalitarianism. Popper is often understood, very much for this reason, to have himself cleaved to the negative concept of freedom. I do not agree with this, at least not wholly. There is a way

to balance between the negative and the positive concept of freedom, and I think that Popper discovered that way. His concept of freedom concerns not merely absence of coercion or constraint, for it also concerns community of criticism. Popper's concept of freedom is not wholly individualistic, for it trades in the communitarian or intersubjective requirements for critical reflection. On the other hand, criticism is a substantially negative concept rather than a positive one, and consequently Popper did not fully uphold the positive concept of freedom, either. On the positive concept, freedom is from acting consonantly with values, consonantly with values that one has rationally authored for oneself. The point of view in question is that values are richer than desires, and that values obtain at all only when, by rational reflection, one has faced down what is hapless or disorderly about one's desires, and one has worked up in place of that haplessness and disorder instead harmonious and well considered overall *forms* of desiring, forms of desiring that represent what one will then remark as the desires of one's own 'truest' self. That is to say, one has in this scenario not merely responded to one's desires as givens, but one has carefully considered what, on reflection, best *deserves* to be desired. One has, in other words, thoroughly investigated for oneself what has value and why. Only then are there values that one possesses and that are truly one's own. If one has truly authored one's own values in some such way, then only to the extent that one can act consonantly with those values does one count as "free" in the sense of positive freedom. Freedom on this positive conception will require not merely the latter opportunity, to act thus consonantly with the values that one has authored, but also the former opportunity, to reflect sufficiently deeply, rationally, and well, that one has truly authored for oneself one's own values.

Isaiah Berlin (1909-1997) has famously argued (Berlin, 1969) that it is dangerous for political philosophers to extol the positive concept of freedom. The question whether one has authored one's own values partly concerns whether one has reflected for oneself rationally and well. That is an evaluative question. However, one may ask who will do the evaluating. Berlin suggests that proponents of the positive concept of freedom typically have fixed ideas concerning what alone it could possibly be to have truly authored values or thence what alone it could possibly be to be free. They have arrogated to themselves the task of doing the evaluating. Berlin suggests that the adoption of the positive concept of freedom as a central normative concept for a philosophy of politics steps us dangerously towards totalitarianism. Naturally Popper is just the sort of philosopher to be sensitive to this worry and to have anticipated it in his own writing. Yet Popper does not withdraw quite, as Berlin does, to the endorsement just of the

negative concept of freedom. Popper adopts a balanced position, I will argue, a position that relates freedom not only to the individual but also to the community, and achieves its rebuff of totalitarianism by its emphasising the *critical* function of reason.

My way to argue that Popper produced and defended a concept of freedom that is balanced between individual and social aspects is to say that Popper's concept of freedom is not quite the negative concept of freedom, that concerns mere absence of coercion or constraint, or thus the mere ability to do as one desires, and also is not quite the positive concept of freedom either, that concerns the ability to act consonantly with one's own values. Instead Popper's concept of freedom represents a careful balance between the negative impulse and the positive one.

Why the negative concept of freedom is inadequate is that desires often are inculcated rather haplessly. To sustain persons' opportunity to do as they desire represents very shallow provision for their freedom if those persons have picked up their desires haplessly, without any reflection. Many persons are, for example, creatures of advertising. The particular desires that they possess have been put into them, by ads. If they had seen different advertisements, then the desires that they would possess would be different. What they desire has little to do with what, as it were, they truly are in themselves. Whether creatures of advertising in any deep sense do even possess a self is moot. They are in fact very shallow, and that is why there seems such scant reason to label them free. Even though nothing constrains them from doing as they desire, they do not seem to possess any very significant freedom.

One thing to note about the positive concept of freedom is that it is communitarian. Yes, whether I am free concerns whether I have authored my own values, just as it also concerns whether now I have opportunity to act consonantly with those values of my own. This seems an individual matter. However, it is not at all strictly an individual matter. I cannot truly author my own values without engaging critically with others. Reflection that is thoroughgoing cannot be accomplished altogether in the crucible of an individual mind. We need one another to reflect with, we need examples of which we can be either positively impressed or critical, we need critical appraisal by others of the way we ourselves are, in order to progress at all in reflection. The community precedes the individual so far as criticism and rational reflection is concerned. In previous chapters, I have remarked already that Popper is fully switched on to all these points. Popper recognises that criticism is a community's task.

Positive freedom is a rich concept that quite likely does possess the danger that Berlin ascribes to it. One needs to back away sufficiently from the danger, but also to insist on greater richness than inheres in the negative concept. Perhaps it is enough to insist that the community precedes the individual so far as criticism is concerned. Perhaps the negative idea of criticism softened by the recognition of criticism's inherently intersubjective character can help us to discover a middle ground between the negative concept of freedom and the positive concept of freedom. We would need to remark merely that what one truly desires one discovers to some degree only through critical reflection. So freedom to do as one desires is made to be a little thicker, by this need for critical reflection. Moreover, the fact that critical rationality requires community shows that freedom is to some degree a communitarian not a merely individualistic concept. At any rate, these are the points for which I will argue in the present chapter.

Popper can seem cheerfully to endorse the bare negative concept of freedom. However, I think that this is an illusion. Popper also accepts cheerfully (as a point of his "methodological individualism") that there is nothing *sui generis* about the social that does not simply express what individuals are like (Popper 1945: 86-89). Popper's philosophy can thus seem very individualistic. Yet Popper also equally cheerfully accepts the converse, that there is nothing *sui generis* about the individual that does not simply express how communities as such work as they do. Individuals can possess critical rationality only if their communities function to produce that kind of individual. You do not get critical rationality except in communities that work that way. The negative concept of freedom is on its face closer to Popper's concept of freedom than is the positive one. Yet when we consider Popper's critical rationalism, and its communitarian as well as individualistic aspects, then Popper may be made out as lifting quite away from either the negative or the positive concept of freedom, to something in the middle, and balanced.

The balanced idea of freedom that I credit to Popper is in my view crucial to understanding Popper's defence of liberal politics. There are certain peculiar features that characterise Popper's form of liberalism — features such as: piecemeal social engineering; negative utilitarianism; limited government interventionism; and, interpersonal rational respect based on mutual criticism. My thesis as a whole argues that Popper's liberal politics have a communitarian aspect. His philosophy is not wholly individualistic. Popper's political liberalism differs from other forms of liberalism. Although, like other liberals, Popper anchored his liberal ideals on the principle of freedom, this chapter argues that Popper's liberal idea of

freedom entails two aspects: the individual and the social. The argument brings the individualistic core of Popper's political philosophy into a social realm. This discussion draws explicitly on the themes of both individualism and communitarianism from Popper's philosophy of science. The basic insight here is that just as Popper achieves various kinds of balance in his philosophy of science, all such balance is further replicated in Popper's political philosophy, where there is a corresponding explicit individualism and yet also an implicit social element.

Some commonly held views about Popper's critical rationalism, particularly his liberal political philosophy, emphasise 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 thesis. The concept of "social freedom" that I further defend in this chapter 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 emphasising intersubjective criticism.

### **Popper's Apparent Individualism**

As previously discussed, the most commonly held notion of Popper's critical rationalism is that it is individualistic. Scholars who claim this pick up upon Popper's own concepts of methodological individualism and ethical individualism. These individualistic concepts do undeniably feature prominently in Popper's philosophy. Individualism seems core to Popper's philosophy until one registers Popper's continual invoking of a social aspect. Since Popper used methodological individualism as a critique of holism or methodological collectivism, and developed ethical individualism as a theory which emphasises individual liberty, Popper's overall philosophy can seem essentially individualistic without any social element. Yet the truth about Popper is richer than this, and more interesting.

Popper did strongly oppose holism<sup>35</sup> or methodological collectivism. That is to say, Popper opposed the doctrine that society as a whole is more than the sum of its parts (Agassi 1960:244). Popper recommended in its place both methodological individualism — "the doctrine that all

---

35 Holism is a concept in Popper's philosophy of the social sciences that emphasizes the study, control and reconstruction of society 'as a whole'. However, Popper remarked that it is a mistake to attempt to regulate the whole of social life because it would be an engagement in large-scale or collectivist planning. Such large-scale or collectivist planning is a utopian dream, as acts of total control of social situations may lead to totalitarianism. See Popper, *The Poverty of Historicism* (1957).

social phenomena, and especially the functioning of all social institutions, should always be understood as resulting from the decisions, actions, attitudes, etc., of human individuals, and that we should never be satisfied by an explanation in terms of so-called ‘collectives’” (Popper 1945b: 91) — and, ethical individualism — the view that choice of moral values is an individual prerogative.

The methodological individualist proposes that the social sciences should attempt to explain social phenomena only with reference to individual actions and dispositions. To Popper, methodological individualism is “democratic individualist” in nature. By contrast, holism or methodological collectivism entails elements of “collectivist nationalism” (Popper 1957: 148). Popper feared that belief in the reality of so-called “collective spirits” would lead to injustice against and suffering of the individual, since individual interests are liable to be sacrificed for the benefit of city, state or nation, as evident in the writings of Plato and Hegel (Gorton 2006: 20).

Ethical individualism is a similar second strand of liberal politics in Popper’s thought. It emphasises the well-being of the individual as of paramount moral concern. In consequence, individuals should be protected from injustice and exploitation (Shearmur 2008a: 52).

Popper’s methodological orientation to the individual and his ethical orientation to the individual are linked (Gorton 2006:20). For, just as Popper criticises holism for its totalitarian tendency and for how it therefore threatens the well-being of the individual, so Popper’s opposing methodological individualism is mandatory ethically, not merely mandatory on methodological grounds alone (Stokes 1998: 80).

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 theorising 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 intersubjectivity and critical feedback from others in Popper's critical rationalism 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.

So, in discussing the concept of freedom in Popper, I argue that there is room for the "social"<sup>36</sup> in Popper's liberal politics beyond the pervasive individualism. The moral core of his critical rationalism encourages the process of openness to criticism which entails both individual and social aspects. Although Popper was critical of holist or collectivist doctrines which often accompany the idea of the community, he did not discredit the values of social relation that foster community togetherness. What many scholars, such as Fred Eidlin (1942- ), see as the blind spot in Popper's political thought- "the problem of community" (Eidlin 1997: 2), is a mistaken interpretation of the key values of the community and the roles of social institutions in Popper's critical rationalism. Popper identified rationality with openness to criticism; and every individual is a participant in this business of objective criticism. However, objectivity, rather than being an individual attribute, is regarded as a social product — a product of critical discussion (Shearmur 1996: 111). The underlying fact is that Popper's individualism is a commitment which begins an analysis from the position of the individual rather than the

---

36 For discussions on the social elements in Popper's philosophy see Popper "Language and the Mind-Body Problem: A Restatement of Interactionism". Proceedings of the 11th International Congress of Philosophy, Vol. VII (1953): 101-107 1953. See also Bryan Magee, *Karl Popper*. London: The Viking Press. 1973: 64-65.

community. Such a commitment does not in any way entail a disregard of community values of social relation or any selfless voluntary action that would benefit the community. In fact, such commitment gives credence to the role that social institutions play, directed by community values, “to protect freedom of criticism, freedom of thought, and thus the freedom of man” (Popper 1945b: 238).

In arguing for a balance of relations, within the context of Popper’s idea of freedom, between liberal politics and community values in politics, I defend a thesis on social freedom. This position on social freedom is aimed at providing an alternative basis for grounding the social character of freedom in Popper’s political philosophy. This delineates a conception of freedom that applies both individual and social aspects of Popper’s critical rationalism. The objective is to eliminate the misrepresentation of Popper’s idea of individual freedom as featuring only the individual without the social. It is also to enhance Popper’s project of an open society and establish that his conception of freedom does not inhibit its application within the context of the community. This is to the effect that social freedom does not undermine both the capacity of individuals to pursue self-determination and the progress of the community that enhances individual well-being. The inclusion of a social dimension to freedom highlights the value of social cohesion where the will of the individual is to some degree harmonised with the will of others in terms of social goals and values. Thus, this results in a two-dimensional approach: (1) the internalisation of the will of the individual towards harmonisation with the will of others, (2) the internalisation of social goals and values towards the protection of the will of the individual, their lives and property. These two dimensions project a political philosophy that understands that there is nothing *sui generis* about the social that cannot, under one form of analysis, be reduced to the individual, and vice versa — there is nothing *sui generis* about the individual that cannot, under another form of analysis, be reduced to the social.

## **Popper on Freedom**

At the core of most liberal philosophies on freedom is an attempt to discover the conditions under which external constraints upon the individual can be minimised (Levy 1978: 153). This liberal view aligns very well with Berlin’s concept of negative freedom. As previously mentioned, Popper did not endorse only the negative concept of freedom because he as 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. It is a balance between elements of individualism and communitarianism. It is a balance which operates at a more sophisticated level than the level of Berlin's article on negative and positive freedom, and that helps to explain why individual freedom is partly a product of the social in Popper. Popper's concept of freedom requires that individuals can act consonantly with values of their own, bearing in mind both the emphasis in this upon the individual, and yet also that individuals cannot author their own values without engaging critically with others. Popper did not close down onto any one view what a rationally well worked out system of values is like. On the contrary, he roundly emphasised the need for society to be open. Popper's concept of freedom is because of this not any completely positive concept. Criticism is after all a negative tool. That critical reflection with others is necessary if individuals are to act freely in fulfilment of their self-determination, and this leaves open what any person values will upon such reflection turn out to be. Popper requires only that an individual's actions are carried out in consideration of the freedom of others within the social environment. Tolerance is to be extended to every last attitude apart from intolerance. With this submission, Popper's conception of freedom can be termed "social freedom", meaning freedom of individuals within an open, critical society. This concept captures both the explicit individual aspect and implicit social or communitarian element that are encapsulated in Popper's philosophy.

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 characterises socialism. According to Popper:

*If there could be such a thing as socialism combined with individual liberty, I would be a socialist still. For nothing could be better than living a modest, simple and free life in an egalitarian society. It took some time before I recognised this as no more than a beautiful dream; that freedom is more important than equality; that the attempt to realise equality endangers freedom; and that, if freedom is lost, there will not even be equality among the unfree.*

*(Popper 1974: 36)*

Popper's political liberalism defended intellectual openness by focusing on the protection of individuals: for instance, the individual's right to information; the right to self-expression; and, a key interest in self-determination in his or her society. By this, the liberal principle of individual freedom, in Popper, presupposes the ability of the individual in an open society to make significant personal decisions within a social universe of choices that are free from the pervasive atmosphere of taboos characteristic of archaic as well as totalitarian societies (Levy 1978: 153). This depends not only on freedom of information and right to self-expression, but also on an individual's being well-educated as emphasised by Mill in his *On liberty* (Mill 1859:83). Certainly, for Popper, freedom depended on the individual engaging in critical thinking and rational criticism. In his view, the idea of freedom of thought and expression which require individuality and intersubjective criticism remains the foundation of an open society. Individual freedom of thought and free discussion are the ultimate liberal values which do not really need any further justification. They are the values which ultimately allow the "transition from the tribal or 'closed' society,' . . . to the 'open society' which sets free the critical powers of man" (Popper 1945a:1). They constitute the path which upholds individual freedom and allows the individual to engage critically with others. This path enhances the freedom to criticise and permits the growth of knowledge through error elimination. It enables a society to be modified by the value of openness, and the tendency for societies to be closed or bounded is transcended.

Popper's view of what freedom entails starts with the fundamental premise that the individual is of primary importance. Although Popper places great importance upon freedom of the individual from external constraints (negative liberty), yet also he considers significant that individuals may act in the realisation of their full potential, and in this connection he affirmed a modest form of positive freedom that concerns the ability to act consonantly with one's own values. The attempt is to have a reflection that is thoroughgoing with a critical appraisal by others. The argument here is that Popper's concern about freedom is not just merely about absence of constraint. Popper thought that freedom is not just merely about one's being prevented by other persons from doing what one could otherwise do. One's own freedom, to Popper, is from authoring one's own values by critically engaging with others, and is from possessing the ability (unopposed by any overriding societal constraints) to do as one then desires. This is "open society freedom", and represents Popper's concept of "social freedom" as I have construed that. Freedom for Popper is on the one hand individual, as it relates to one's

personal desire to perform an action, along with one's being able to perform such action in relation to how it affects others. Yet freedom for Popper is on the other hand social, as it relates to one's having engaged critically with one's fellows, and by dint of this, to one's having authored for oneself one's own values. These conceptions impose in a unique way the usual liberal demand for toleration, of any position but an intolerant one. They impose this demand by the way they demand intersubjective critical engagement. Only persons who listen to opposing points of view with a willingness rationally to engage with them can be free in Popper's understanding of the term. So a high degree of toleration is required by the demand for people to be free. Popper's position on freedom places individual freedom on the pedestal of the social, in the guise of intersubjective critical engagement. Popper relates freedom not only to the individual but also to the community.

Facing obstacles to pursuing one's interests or desires can lead to a sense of frustration. Popper provides a helpful example; 'should we prevent a pianist from practicing, or prevent his neighbour from enjoying a quiet afternoon'? Both instances of prevention engender a feeling of frustration; their level of frustration reflects the extent to which the two individuals (the pianist and the neighbour) experience this as an obstacle to attaining satisfaction or as contrary to what either of them desires or wants to do. To both, the only freedom that matters is the freedom to do what they desire to do or what they believe they have a right to do. This sort of freedom is of the negative kind, and merely to emphasise it is not entirely Popper's position on freedom. Popper's response to this, is that there is an *a priori* principle in real life which demands limitations to the freedom of each individual and how it can be minimised and made equally applicable as much as possible (Popper 1963: 351). This principle is an appeal to existing traditions and customs, to a traditional sense of justice and, above all, to a 'moral framework' (corresponding to the institutional 'legal framework') of a society which sees individual's freedom from the basis of critical reflection and engagement with others. This moral framework serves as the basis which makes it possible to reach a fair or equitable compromise between conflicting interests within the social milieu where this is necessary, such as the case of the pianist and the neighbour (Popper 1963: 351).

The basis upon which Popper laid the moral framework of freedom is in the requirement to come to terms with the fact that our freedom is indeed limited by a concern for the reasonable freedom of others, requiring toleration that is effectively codified by morality. This limitation impresses upon one the reasonableness in engaging with others. This is in order to fully

appreciate the degree to which one can exhibit actions that one desires to do that are at par with actions that others also desire to do. It is within this limitation and critical engagement with others that persons are free. Popper's conception of freedom quite recapitulates an argument from tolerance. Tolerating all but the intolerant and being similarly tolerated by others while regarding criticism as no mark of intolerance and instead as vital to freedom is quite the way in the first place to be free.

### **Argument from Tolerance**

It is within the spirit of Popper's idea of individual freedom that there be reasonable limitation of the mere ability to do as one desires by placing comparable significance upon what others desire to do. Already within the very idea of individual freedom, Popper's idea of tolerance becomes relevant. Tolerance is the moral framework which Popper addressed in terms of individual differences. Tolerance is required when individual actions resulting from their freedom impinge on freedom of others. This comes to play in reaching a compromise when conflicts arise between two or more people whilst observing individual freedom. For Popper, therefore, the idea of tolerance is the seed out of which grows the idea of respect for human freedom and convictions, and out of which thus also grows the idea of the dignity of all men (Shearmur and Turner eds. 2008b:271). It is the idea that by tolerating actions of which one does not necessarily approve one is showing respect for the dignity of other men. In other words, tolerance involves disapproving, and perhaps also criticising, what another person believes or does, but nevertheless not acting against them because of this disapproval, and treating the criticism of them if any both as tentative, and if on the mark, as a gift.

From the above considerations, one can deduce that Popper's ideas of freedom and tolerance are not exclusive but complementary, and they work together to enhance the values of an open society. The basis of Popper's liberal tolerance framework is that when one is free to perform an action, what one desires to do does not necessarily have to impinge on the freedom of others. The point of liberal tolerance is to provide grounds for cooperative action with those for whom we do not necessarily share the same substantive ethical values and commitment. The liberal idea is that there is an overall, general moral framework allowing social cooperation, but that individuals and groups within the society can hold different substantive specific ethical (moral) frameworks.

In granting freedom and tolerance as the liberal values of an open society, Popper did not, however, view either as unlimited. He averred that even if we guarantee individual freedom to all those who are prepared to reciprocate, we must not include in this guarantee those who seriously propagate intolerance (Shearmur and Turner eds. 2008b:273). Popper remarked that intolerance should not be tolerated:

*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.*

*(Popper 1945b:543)*

Popper's argument that intolerance should not be tolerated is convincing in the light of the fact that an unlimited tolerance is antithetical to the exercise of freedom. This point can be strengthened with an argument which justifies, for instance, a government action against a group of individuals pursuing democratic government with the intention of thereafter establishing an intolerant and totalitarian religious state. Since no responsible state would tolerate such nefarious activities even if a case of an exercise of individual freedom is established, a state must ensure that a tolerant society is defended. This argument aligns favourably with Popper's liberal idea of government interventionism which is aimed solely at the protection of the individual.

Moreover, a more cogent point is that there is no obligation on the part of the tolerant to tolerate the intolerant. This suggests that it is within the purview of the state to determine the extent to which an individual is able to tolerate the intolerant. There may, however, be another factor, besides just being able to determine the extent to which we express our freedom to tolerate the intolerant or otherwise, which would suggest why an open society is devoid of anarchy. The theoretical supposition would have been the extent to which the tolerant should go before they can decide to take up arms against anyone regarded as intolerant. Popper sought to address this concern through the establishment of legal institutions of the state that would implement the necessary laws for the protection of the individual.

One of the duties of the state is to ensure that society tolerates its 'lunatic fringe' as much as possible. An open society (a liberal democratic state, in this case) will attempt to restrain the bully from bullying his neighbour, and it will see in the state, the guarantor of the right of everybody to be protected from being bullied or compelled, not only by those who happen to

be powerful, but also by those who attempt to seize power in order to establish a tyranny (Shearmur and Turner eds. 2008b: 240). The state, to Popper, exists only for the protection of individual freedom and, because all power is dangerous, state intervention in social and economic life should be “limited to what is really necessary for the protection of freedom” (Popper 1945a:110). More importantly, is the need of the state to educate its people so that they can fulfil their potentials.

In many respects, Popper’s idea of freedom can be defended on deontological grounds. As with deontological moral theory, Popper’s idea of freedom also stipulates a certain kind of duty which guides and assesses our choices of which actions we ought to perform. While emphasising moral obligation and right action, it also focuses on the dignity of persons to be respected and protected, as long as one is neither prevented from exercising one’s freedom nor does one act in a way that will impinge on freedom of others. The former requires the exercise of individual freedom; the latter requires the element of critical engagement with others. These considerations reflect the balanced element of the individual in relation to the social in Popper’s form of liberalism. They reflect the essential features of an open society, that is, a tolerant society — a society which tolerates the peculiarities of the individual and, more especially, in which critical thought is tolerated (Shearmur and Turner eds. 2008b:136).

While the above description is appealing, the assumption that liberal philosophy in Popper’s open society requires only individualism (suggesting that improvements are impossible without it), is, I argue, objectionable. The significant objection that Popper made against the holism of Plato and Hegel relates to their emphasis on the “whole” over its part, that is, the community over the individual. This emphasis, which erodes individual rights to make free choices towards the progress of society, may lead to totalitarianism. Although Popper’s concern is telling it does not disregard the values of social interaction and cohesion that the community fosters unto the individual.

So, over against a standard expectation that Popper’s liberalism only upholds values that have individual principles, I argue that the core of his critical rationalism encourages the process of openness to criticism which entails both individual and social aspects. The central theme of Popper’s critical rationalism enunciates “an attitude of readiness to listen to critical arguments and to learn from experience” (Popper 1945b:225). The individual and social aspects of Popper’s critical rationalism require that every participant in the game of critical discussion be

prepared to listen to criticism, to be able to accept criticism to practice self-criticism, and to engage in mutual criticism with others (Gattei 2002:247). Consequently, once a conducive subjective attitude is established by individuals, reasoning is conceived as a social process of inter-subjective confrontation (Gattei 2002:247). This social process of inter-subjectivity aids the way that individuals relate their experiences, and how experiences inherently transcend the individual's sphere towards interpersonal relations. This analysis makes the case that the rational individual is necessarily committed to engaging others on certain terms (including tolerance and openness to criticism), insofar as freedom is tied up with rationality, then freedom is social. This argument is apt for a justification of the thesis on social freedom in the way that freedom entails the capacity of the individual to self-determination as well as the social process of interpersonal relations. This reflects the complementarity of both individual and social aspects of Popper's critical rationalism as they enhance his project of an open society.

### **The case for social Freedom**

The traditional liberal understanding of freedom centres on the ideas of individual liberty, individual rights and in connection with rights to egalitarianism. In this respect, the individualist and egalitarian elements in these strands justify an ethical primacy of the individual against the pressures of collectivism (Gray 1995:73). Classical liberalism is grounded in this primacy of the individual. Such a liberal philosophy presupposes that the ontological state of the individual is solitary, and consequently suggests an autonomous development of the individual away from the influence of the community. Evidently, such a notion of individualism gives rise to values that emphasise self-expression, independence and personal achievements. The conclusion which this suggests is that we can only coherently talk about the egocentric aspect of individualism, together with its focus on the uniqueness of the individual. This in turn suggests that individualism weakens both social interconnectedness and community spirit. In all these suppositions, the notion of individualism appears to be a flawed classification, with grave implications for how it portrays the "self" as an atomised individual, disconnected from the social and political identities that affect his or her personal choices and decisions.

Like many liberals, Popper also entrenched his liberal philosophy in the importance of the individual; yet averred a vital epistemic value obtained through the social conduct of individuals (Gattei 2002:247). Both the individual and social aspects of Popper's critical

rationalism underscore the seamless connection between his philosophy of science and political philosophy. This is discerning of an intimate connection between Popper's contributions to philosophy of science and to political philosophy, points that I have earlier stated.

In politics, critical rationalism stipulates a set of principles which are epistemological in nature that prescribe the social and political rules for the human cooperation necessary for knowledge (Gattei 2002:247). This methodology depends for its implementation upon inter-subjective and interpersonal relations that transcend the individual level and concern the social. It involves "I-thou"<sup>37</sup> relations among individuals. It promotes the human social relationship necessary for the development of society. This argument defeats the general conception, held by Eidlin and others, that Popper's political thought creates a dichotomy between the individual and the community. On the contrary, Popper's political philosophy considers perfectly centrally a tension between the nature and freedom of the "self" and the role of the community in the life of the "self". Shearmur buttresses as follows the point of view that in Popper's political thought social interaction precedes political activity and defines its purpose:

*The . . . agenda that [Popper] commends to us as a goal of political activity are ... products of the actions of individual members of society, acting in their various social and institutional settings.... While each of these people must play a part if the goals that Popper is commending to us are to be achieved, what he is discussing are the by-products of interactions between many different people.*

*(Shearmur 1996: 7-8)*

In Popper, the relationship between the individual and the social, that is, the relational embeddedness of the "self" with others is grounded in both epistemological and ethical principles. Both principles underlie the essentials of the individual and social aspects of Popper's liberal idea of freedom. The idea of freedom involves, among other things, toleration. It is the idea which discerns the ability for mutual learning in the interest of truth. By so doing, each learns to tolerate others and also to recognise others as potential equals. To presume the potential unity and equality of all persons is prerequisite if persons are to discuss matters in a rational fashion (Popper 1992: 199). This prerequisite is therefore based on both epistemological and ethical principles that depict the main ideas of how individuals become

---

37 This is a concept originally used by Martin Buber (1878-1965) in his book, *I and Thou* (1937) to describe necessary mutual relationships for authentic existence among human beings. For more information, see Kenneth Kramer and Mechthild Gawlick (2003), *Martin Buber's I and Thou: Practicing living dialogue*. New Jersey: Paulist Press.

socially embedded with others as they engage in mutual criticism based on a rational understanding of mutual respect, unity and tolerance. Such a rational undertaking of mutual understanding is a social product — a product of critical rationalism.

Thus, Popper's liberal idea of individual freedom must be understood in the light of the argument that individual freedom is entrenched with others in the society, and the individual is not necessarily free from cultural and ideological influences of their community. This point seems to align with merits inherent to the idea of the relational embeddedness of the self that communitarians defend.

Contemporary communitarians, such as, Michael Sandel (1953- ), Michael Walzer (1935- ), Alasdair MacIntyre (1929- ) and Charles Taylor (1931- ) have well-articulated arguments about the relationship that exists between the individual and society. The arguments of the communitarians draw on two methodological claims: (a) ontological or metaphysical claims about the social nature of the self; (b) normative claims about the value of the community (Bell 2012: n/p). Ontologically, communitarianism explicates the communal/social nature of the "self". Communitarians emphasise that the self cannot exist outside the context of community, as the consciousness of the self is constituted by its interaction, interconnectedness and interrelationship with others. This socio-ontological dimension of the "self" promotes the idea of the self in relation to others.

Although these communitarian arguments are consistent with the individual and social aspects of Popper's idea of individual freedom, Popper's philosophy differs essentially from that of the communitarians when they suggest that individuals have no personal freedom to act on their own initiative unless they act for the common benefit of the community. In fact, the communitarian discussion on freedom raises a fundamental question about the way in which personal decisions and achievements can be possible within a community that makes the individual seem unfree. Communitarianism emphasises the role of the community values to the determinant of individual autonomy and self-determination. The communitarian perspective on individual freedom proceeds on the assumption that freedom is about total suppression and subjection of every individual to the collective general will of J.J. Rousseau's kind. When communitarianism constrains human freedom to an extent that blocks individuals from performing actions which they desire, this provides support for Popper's critique of holists/collectivists ideologies.

In the light of my thesis that the liberal idea of freedom in Popper's political thought entails a social dimension in spite of a pervasive individualism, I argue for a balance of relations, within the context of Popper's idea of freedom, between liberal politics and community values in politics. An insight into both individual and social aspects of Popper's liberal idea of freedom necessitates the task of reconceptualising this concept of freedom that clearly discerns the inherent elements of "I-thou" relations. This reconceptualising is anchored on a concept of social freedom which attempts to correct the misrepresentation of Popper's idea of individual freedom as featuring only the individual without the social. Social freedom in this context grounds the basic norm at the core of the epistemological and ethical commitment of Popper's critical rationalism as a social product.

At its core, Popper's critical rationalism requires effective social processes and institutions. However, the concern about the social aspect of critical rationalism, on the one hand, regarding the consolidation of individual preferences in a pluralist liberal society needs consideration. On the other hand, the issue of collective agreement on common substantive moral and ethical commitments essential to communitarianism needs to be addressed in a way that ensures that individual personal freedom and liberty are not eroded by others within a social community.

Clearly, our relationships with others very much do constrain our freedom, that is, if we define that freedom in the manner that sees freedom as the ability to pursue one's desires. However, if we do not qualify the rationality of those desires through a substantive theory of morality that incorporates a tempering assessment of the rationality of those desires within the wider context of communal good, then we may have a clash between individual freedom and the demands imposed by the duties of relationships of the communal good. In the traditional society, as MacIntyre emphasised, the duties imposed by those socially defined roles, fathers and university lecturers set strong ethical parameters within which the individual can operate (MacIntyre 1984: 147). Liberal individualism and the concept of negative freedom have served to throw those traditional roles and corresponding duties into question. In so doing, liberal individualism has served to progressively erode communal values, and while upholding the value of individual expression. There is a tension here, and this is what critical rationalism addresses in establishing Popper's communitarian essence through the social aspect in his idea of freedom.

The emphasis on the social character of Popper's liberal idea of freedom is to redefine the concept of freedom in contrast to the reductionist view that is commonly held to be the case. The aim is to aver that the Popperian idea of freedom also entails an aspect of the social. Popper's liberal idea of freedom should not disallow ideologies which promote community values of social relations. Popper only intended his work on politics as "a defence of freedom against totalitarian and authoritarian ideas, and a warning against the dangers of historicist superstitions" (Popper 1976: 57). His defence of freedom is not intended to disregard community value of social cohesion.

Although what freedom entails in Popper's writings appears only to concern the well-being of the individual, my defence of social freedom in Popper's politics is based on the recognition that Popper's idea of freedom is broader and can be extended to address the social aspect. This is an attempt to reconstruct Popper's argument on freedom in its strongest form and to present a coherent concept of freedom that accommodates both individual and social aspects. In the individual aspect, Popper's liberal idea of freedom maintains the character of freedom to do what one desires to do or believes one ought to do. This is a model of freedom which abhors infringements on individual freedom, upholds freedom from external constraints on human actions, and emphasises self-dignity and self-respect. For the social, freedom in Popper is definitive of social interaction and social groupings. It is freedom seen from the perspective of social interdependence with others. Both individual and social aspects of Popper's liberal idea of freedom encapsulate into what I defend as social freedom.

In the broad perspective of Popper's idea of freedom, this thesis on social freedom respects the concept of individual freedom and so respects individual self-determination but emphasises relations within and responsibilities to the social environment. This position can be termed to mean that the freedom to express one's personal desire to perform an action, and the powers and abilities to perform such action must be considered in relation to how it impinges, it profits, it benefits or how it is detrimental to others. As such, freedom is interdependent upon others within one's social environment. This idea of social freedom is central to the idea that the individual 'self' makes meaning only within their intricate relationship with the community. This relationship characterises what can be termed the 'social individual' (Mulhall and Swift 1992: 13). The social individual establishes the necessity of a social background to grounding claims to and exercising one's freedom. The social individual requires that every person is socially constituted and our essence is derived from the existence of the community. This gives

rise to upholding the social dimension of the individual, and the condition that each individual is decisive of the choices she makes within a social environment.

In all of this, the task of the concept of social freedom is to elaborate on the epistemological and ethical/methodological issues that underpin Popper's liberal idea of freedom. These issues underscore the justification of a synthesis of two fundamental aspects of Popper's liberal idea of freedom under consideration: individual freedom and freedom exercised in relation to others. These aspects are to be synthesised into a coherent concept of social freedom. Social freedom ensures that the basic freedom of every individual is observed for as long as this freedom is exercised in consideration or in relation to others. While the expression 'self in relation to others' codifies the values inherent in the social we-community, the idea that the individual is free to exercise their freedom without impinging on the freedom of others elucidates individual self-determination. This conclusion explicates the social freedom discourse in a manner that allows both individual and social aspects of Popper's idea of freedom to be articulated jointly, in a fashion which reinforces commonality of purpose within the normative framework of the discourse. With this commonality of purpose, the liberal values of openness, tolerance, individual freedom and engagements in mutual criticism with others with which Popper anchored the philosophy of critical rationalism can continue to enhance the open society precisely in Popper's understanding of that term.

## **Conclusion**

In so arguing for social freedom I am motivated by Popper's liberal idea of freedom. Popper's liberalism defends intellectual openness by focusing on the protection of individuals; for example, in individuals' rights to information, to self-expression and to a key role in self-determination. These are also ideals that are to be recognised as a by-product of the social. However, emphasising the individualistic aspect of Popper's liberalism alone potentially denigrates the social aspect of Popper's politics, particularly where the ambient ethics, to the extent that social institutions function, is itself social. Both the individualistic and social aspects of Popper's liberalism are essential. A liberal idea of freedom in Popper must be accompanied by the essentials of both individual and social aspects. These essentials result into the concept of social freedom that this dissertation defends in a sense that can enhance the political openness of mutual criticism and interaction with others that Popper's political thought upholds. Therefore, social freedom, in the broad context of Popper's idea of freedom, is to

protect the principle of intricate relationships that an individual has with others, and to argue that the relationships do not, in any way, erode an individual's personal freedom and liberty.

## Chapter Eight: Beyond the politics of Liberalism

*Before we as individuals are even conscious of our existence we have been profoundly influenced for a considerable time (since before birth) by our relationship to other individuals... We are social creatures to the inmost centre of our being. The notion that one can begin anything at all from scratch, free from the past, or unindebted to others, could not conceivably be more wrong.*

*(Popper cf. Magee 1973: 64-65)*

### Introduction

The evaluation of Popper's liberal politics in chapters 6 and 7 offers a nuanced assessment of his liberal ideas of piecemeal social engineering and his defence of individual freedom. For piecemeal social engineering in chapter 6, the concept finds a ready application in contexts where there is a significant agreement concerning to which type of societies it is best suited, such as in most Western societies that are already considered to be developed. Societies that are less developed appear to require faster, more sweeping, political change than could be achieved by one-piece-at-a-time piecemeal social engineering. In that case, the question of why social reform should be piecemeal is fundamental. However, chapter 7 considers the reason. This concerns the central liberal idea of freedom but acknowledges both the individual and social aspects. One can understand in terms of the problem that collectivist ideologies pose for individual freedom why social reform must be piecemeal, even if the extent and pace of change that is manifestly required argues that reform of this kind be mounted many-pieces-at-a-time.

There is much to be admired in Popper's political philosophy, particularly his insistence on piecemeal engineering as a model for social reform and his defence of individual freedom. However, questions of practical applicability can be raised about how reforms in Popper's liberal politics would fare in non-liberal societies. While these concerns have been identified and modifications prescribed in chapters 6 and 7, I return to these because of the acknowledged weaknesses in Popper's liberal political philosophy. I argue that a better reasoned understanding of some enduring Popperian strengths is needed. By a consideration of Popperian weaknesses and strengths, I will develop different way of thinking of liberal politics towards determining what social policies it would be wisest to adopt in non-liberal societies.

Looking beyond the received view of Popper's form of liberalism, according to which Popper's liberalism is informed by altogether individualistic principles, and studying instead or in

addition a dimension of Popper's liberalism which is social in nature, I have argued, in chapter 7, that Popper achieves a balanced understanding both of the nature of freedom and what is involved in order to protect freedom. In this chapter I extend this discussion, in order to consider the theoretical basis upon which societies that are non-liberal in nature can learn important lessons from Popper given the balance in his position on liberal thought. Such non-liberal societies are in their communitarian orientation not on that account untouched by Popper's insights. On the contrary, in arguing that Popper's own philosophy was trending towards a liberal-communitarian one, by emphasising the social dimension of liberalism, and by justifying my arguments with theories of the social character of the self and the social nature of the human consciousness, I show how happily thinkers in non-liberal societies can pick up Popper's insights and usefully work with them. This is in a bid to establish a political philosophy that makes good sense of social and intellectual conditions, for instance, in Africa, that is attuned to important strands of intellection on that continent, and that nevertheless uses Popper to reconsider the key liberal concepts of justice, rights, freedom and equality. In this connection, I will sketch the perspective of Will Kymlicka (1962- ) on liberal-communitarianism which takes cultural membership of individuals to their communities as central. Rather than following Kymlicka in relying upon culture, I defend a position on the inherently social nature of human beings as the basis for a social dimension to the liberal-communitarian political philosophy. The conclusion of this chapter is that a liberal-communitarian philosophy, as a way of thinking beyond the politics of liberalism, can enhance Popper's project of an open society. My thesis is that liberal-communitarianism does not undermine the capacity of individuals for self-actualisation but rather promotes the "I-thou" human social relationships for the progress of society.

### **Beyond Popper's Liberalism: The Social Dimension**

A fundamental factor in Popper's liberalism, as with all other forms of liberalism, is the insistence that individuals are the primary variables in any rational (scientific or political) inquiry (Sassower 2006: 48). Yet, Popper differed from other liberals because of his insistence on the epistemic value of social conduct among individuals. No doubt, Popper was critical of collectivist ideologies; first, because of their inclination to sacrifice individual freedom and rights, for the good of the whole; second, because of the totalitarian tendencies they portend. Popper's form of liberalism holds that the choice of moral, social, political and scientific values depends entirely on the individual. However, the question of how individuals interact with each

other within social and political institutions, scientific community and legal structures in the society (Sassower 2006: 49), he addressed by a recourse to the social process of inter-subjective interaction and mutual criticisms underlying his philosophy of critical rationalism.

Although the notion of individualism in Popper is often emphasised, I have also stressed the social aspect of his liberal politics. The underlying basic understanding of Popper's political liberalism presupposes that individuals are free to choose their own values and ends, in particular because the choices they make help them towards an individualised understanding of the world they live in. Yet they depend on socially shared dispositions and responses for their ability to live in a social community (Pettit 1998:169).

The social dimension in Popper's liberal politics can be used to understand the values of the open society establishing meaning within social environments and being ever enhanced by social interactions. This social dimension to liberalism differs essentially from the notion of collectivism of which Popper is critical. The inclusion of a social dimension to liberalism highlights the value of social cohesion where individual will is harmonised with the will of others. This dimension foregrounds the emphasis on absolute individualism which does not consider the social dimension of "I-thou" social relations in politics. This inherent value of social relations among individuals is what Philip Pettit (1945- ) conceptualises as social holism: the idea that individuals are not entirely free-standing, for, they depend upon one another for the possession of some property that is central to the human being" (Pettit 1998:170).

Like Popper, Pettit condemns the effect of forcing the societal will on the individual, which collectivism entails. However, while the social aspect of Popper's liberalism is merely implicit, Pettit explicitly argues for the necessity of a social dimension in the fulfillment of individual aspiration. With Pettit's concept of social holism, individualism is not compromised; yet, social relations are recognised as essential for a human being to become an individual personality. The concept of social holism provides no threat to individualism as characterised in Western liberalism in terms of freedom, rights and equality (Esfeld 2001:43). This argument that there are no threats to individualism in liberal politics at the inclusion of a social dimension, can be established on the grounds that there are certain psychological properties of the individual; such as needs, wants and the desire for self-actualisation; the fulfilment of which is achieved only through the social. These properties of the individual are intertwined with the nature of the human person which is a process, motivated toward a balanced social relationship with the

others. This process, therefore, is inclined toward a form of solidarity based on community of interests, goals, objectives and standards. In this way, this process promotes the self-actualisation of the individual that fulfils to an ever compounded extent the individual's capacities for development; at the same time, this process maintains a balance where both individuals and society are mutual beneficiaries.

The analysis on the social dimension to Popper's politics can be further strengthened and justified based on the argument concerning the social nature of the human mind. The capacity of the individual mind both to abstract physical and mental states and to empathise with other people is itself profoundly social in how it is realised and in what it is for it to be fulfilled. Any individual's mental capacity itself reflects the social nature of the human mind, for mental capacity is shaped, and normally functions, in continuous interaction with other people (Riitta and Kujala 2009:454). The capacity of the human mind to cognise consciousness and make individual choices is dependent on the capacity of others also to make choices. This dependence on others has implications for social interactions among people, and this ultimately implies that "thought in the ordinary human form is essentially a social activity" (Pettit 1993:342). In this general sense, the human mind is a social mind. It exists rightly at the level of individuals but it functions optimally at the level of social interaction among people. This is the assumption that Pettit termed the "common mind" whose contents and functions are 'common' to the extent that if one individual is 'minded' this entails that others are 'minded' too; there can be no mind in this common sense, without there being a society of minds (Pettit 1993:342).

There are three basic assumptions generated from the arguments above: first is the position that individual self-determination is of utmost importance in the sense that individual basic rights and liberties are inviolable; second is the argument that social interactions in terms of "I-thou" relations are necessary to what constitutes a human being (in respect of how humans are ontologically dependent on others to constitute a social community); third is the argument that since there is no threat to individualism in the spirit of what Popper's liberal arguments uphold a social context of liberalism is plausible in the sense that it aligns well with communitarian, ethical, political ideology of being.

On the above showing, we can talk of Popper's form of liberalism as possessing an essential social dimension that is consistent with those features of freedom, rights and equality at the centre of the *Open Society*. This further establishes that Popper's liberal politics entails both

individualist and social aspects. I maintain that this then brings into the discourse of Popper's liberalism a new way of thinking that addresses the socio-political concerns of non-liberal societies; to the extent that the social is harmonised with the individual in contemporary political philosophy. Communitarianism seems, to me, the most impressive political philosophy which addresses those non-liberal concerns, and often reveals itself in relations to community, social relations and culture. The social dimension that is fundamental to communitarianism when harmonised with liberal individualism would give us a liberal-communitarian order. Such a liberal-communitarian philosophy would consider social relations as a condition necessary to understand the nature of social explanation and bring about a good political standing for non-liberal societies; yet, would be far from compromising individualism. It would, however, in part, differ from the liberal view about the nature of community and culture that is associated with Kymlicka which, no doubt, has a commitment to the individual but takes the cultural membership of every individual to be central.

### **Differentiating the Social Dimension from the Cultural**

The arguments above seek to establish grounds for a social dimension to liberalism and how liberalism can be harmonised with communitarianism in a sense that allows the values of Popper's open society to be achieved. From this account, a justification of why Popper's liberalism is also accompanied by the social, owing to the inherent social nature of human beings, is established.

In spite of the above consideration, many accounts such as the one by Kymlicka provide an alternative underpinning through cultural membership of individuals. To detail Kymlicka's position on culture as a justification for liberal-communitarianism is crucial for this study. I discuss the implications of his position for political philosophy in order to argue that culture narrows but at the same time strengthens the potentiality of extending liberalism to societies that are non-liberal. A liberal-communitarianism is possible that speaks well (and in spirit quite as Popper might himself speak) to the needs of these societies. At the same time my discussion is meant to complement Kymlicka's, and by use of Popper, to show a better way. Kymlicka's account about culture gives the impression that culture is an all-purpose condition without saying what grounds or generates this condition. This is different from my own arguments on the social dimension to politics which justifies in a somewhat Popperian way the position of

liberal-communitarianism, by using the conception of the inherent social nature of human beings.

Kymlicka's argument emphasises culture as a basis for political alignment within a multicultural society. His argument for incorporating cultural membership into the liberal framework is that cultural membership provides the social context within which liberal self-understandings of agency and individual autonomy may be developed (Peetush 2003: 299). Kymlicka is specifically interested to develop a comprehensive Western liberal philosophy that would deal with the issues of cultural diversity within a society that is multicultural. He is interested to develop a theory of cultural pluralism that approaches "the challenge of multiculturalism" from a Western liberal perspective (Kymlicka 1995: 2, 9). His interests lie in the way liberals ought to respond to non-Western national groups and ethnic minorities (Peetush 2003: 291).

In this, Kymlicka seeks to align with liberalism a form of extreme communitarianism which emphasises culture rather than the moderate form of communitarianism that I advocate quite because of the way in which it stresses social relations. Kymlicka articulates a form of liberal-communitarianism which exemplifies the importance of cultural membership to the exercise of individual freedom and choice. However, Taylor has criticised Kymlicka's focus on individual freedom as bolstered by cultural membership as being too individualistic and so insufficiently communitarian. Taylor's criticism is that in spite of Kymlicka's articulation of the need to entrench an integral and undamaged cultural language with which one can define and pursue his or her conception of the good life, Kymlicka's focus is the need to guarantee individual choices, and not with the survival of the various cultures (Taylor 1994: 40, 58). Taylor offers a perspective on liberal-communitarianism that is deeply rooted in the substantive content of cultures themselves (Burke 1999:123).

Taylor's perspective is not without its own theoretical issues and concerns<sup>38</sup>. Acknowledging it, but also setting it to one side, I want to consider Kymlicka further, and to discuss a number of issues that are problematic about Kymlicka's conception of cultural membership. First is the usage of the term 'culture' for bridging the liberal-communitarian challenge of individual autonomy and community belongingness. Kymlicka seems to have considered culture to

---

38 For discussion on these concerns see John Francis Burke "Reconciling Cultural Diversity with Democratic Community", 1999.

include consistently known behaviours and attitudes which a certain people exhibit often within a certain geographical realm. These behaviours and attitudes of a people are seen in terms of how the people classifies its experiences and how its members communicate these experiences socially. However, Kymlicka fails to acknowledge the cultural complexities that are involved within heterogeneous populations with very many different social outlooks, tribal diversities and, often times, ethnic incompatibilities. The idea of cultural membership which Kymlicka proposes is fraught with issues of ethnicity, tribalism and nationalistic rivalry. With issues such as these, there is the tendency for the state to witness political instability, economic depression and social disintegration. This is why I maintain here that the term 'culture' is not suitable for addressing the challenge of a liberal-communitarian political philosophy. This indicates that Kymlicka's approach does not adequately address the current contemporary liberalism-versus-communitarianism debates as it relates to cultural issues such as the questions of conservatism and the rights of internal minorities, for instance, women, children and sexual minorities.

Although Kymlicka develops a liberal theory of minority rights originally for Western democracies and its attendant multiculturalism, he wishes also to see if such a Western model of minority rights would be acceptable within a society that is strongly communitarian. He makes a distinction between two group rights, namely external protection, that is, the need for minorities to have certain protections against the exercise of majority power, and internal restrictions, that is, the conception that individual members of the minority group should not be restricted in their freedom to question and revise group tradition and practices. In both cases, Kymlicka's submission is that liberal theory of minority rights requires equality between groups (external protection) and freedom within groups (internal restriction) (Kymlicka 1995: 152). It is with this conception of minority rights that Kymlicka articulates his liberal view as it relates to the issue of rights for cultural communities. He contends, however, at the same time, that liberalism deals with issues such as the value of individual liberty as well as the issue of cultural membership within a multicultural society. Liberalism addresses issues concerning cultural and minority rights. Kymlicka avers that culture is very important both to the development of internal minorities within a multicultural society as well as for individual self-reflection. Thus, culture reflects the basis of the liberal framework that kymlicka provides as grounds for communitarianism.

Second is the issue of internal minorities within cultural communities. This issue is culturally specific and it often poses a challenge to egalitarian liberals and multicultural theorists as

regards how to promote rights and equality within minority groups. Both egalitarian liberal advocates of multiculturalism and strict communitarian defenders of culture usually aim at a more inclusive approach to rights and equality, except for the challenge of an acceptable standard for minority rights. The dilemma is how to justify the standard of rights and equality for minority groups, for instance, for a society which extends special protection and accommodation to patriarchal cultural communities, within a liberal egalitarian society that sees gender equality as a fundamental value (Song 2010: n/p). For Kymlicka, the rights of internal minorities or ‘group-specific’ rights are in line with liberal framework of justice, equality and individual rights. Kymlicka argues that minority groups, especially national minorities such as the Canadian Quebecois or the New Zealand Maori deserve special rights from their states by nature of the uniqueness of their history, common culture, common language, ability to govern themselves through indigenous institutions, and most especially their cultural group’s original presence when the land or state was founded (Kymlicka 1995: 70).

Third, the “cultural” factor which Kymlicka uses at the centre of his thesis casts a shadow of doubt on his distinctions of the two kinds of group rights. His original intension was to ensure that the rights of minority groups to retain their cultural membership remain strong within a multicultural society. However, with the modification of his initial conception of culture from “a people” or “a nation” or “a group” to that of “societal culture”, which he conceives as being typically associated with national groups (Kymlicka 1995: 75-76), this conception becomes too nationalistic in nature, suggesting that a people need to identify with an ethnic nationality or tribe to be able to survive politically. Indeed, this might not be right as a matter of fact. For one thing, the minority cultural rights that Kymlicka advocates become eroded as the internal minorities lose their cultural identity at the expense of societal culture. Moreover, this conception seems inappropriate within a multicultural society which is expected to recognise minority cultures and rights as the case may be.

Above all, with Kymlicka’s emphasis upon cultural membership comes the difficulty of identifying how liberals can (or ought to) accommodate the demands of indigenous communities to be able to organise themselves according to their more communal self-understandings (Peetush 2003: 298). The difficulty here is how liberals can accommodate a people who desire the freedom to be able to live and organise themselves according to their own self-understandings and in some ways counter-liberal cultural views of life. The argument

is that there are deep cultural differences even among communitarian societies, and that Kymlicka's concept of cultural membership and his distinction of internal restrictions from external protections of group minority rights fail to address the situations (a) where the prevalent ethical and political values are communitarian but the people are not alike in their communitarianism; and (b) where the level of individual freedom that some minority group is willing to grant is on its face counter-liberal, just as is the extent of the minority group members' dedication to the community to which they belong.

In spite of the above criticisms, what Kymlicka offers is a significant and commendable attempt to align a sophisticated form of liberalism with the issue of rights for minority and cultural community. He has challenged the assumed conception that liberalism, with its emphasis on individual autonomy, cannot be linked with the values of community belongingness. More importantly, the liberal account he provides explicitly expresses a commitment to individual liberty which is bolstered by cultural membership and community rights. He is one of the most recent pioneers to provide justifications for bridging the divide between liberal individualism and political communitarianism.

### **Liberal-Communitarianism: A New way of Thinking**

The contention between the politics of individual rights and freedom, and the politics of the common good has always centred on attempts to strengthen arguments of one against the other. This is the heart of the debate between liberalism and communitarianism. Rawls, and, more specifically for this purpose, Popper are liberals who favour individualism over collectivist ideologies such as communitarianism. Communitarians, such as Taylor, MacIntyre, Sandel and Walzer, argue in defence of shared cultural values, traditions and norms that are said to ensure community belongingness in politics. Communitarians advocate the entrenchment of a cultural community as a foundation for political community and as a basis for political rights.

The response to the question of why both liberals and communitarians need always be in conflict with one another informs the philosophical justification of this thesis on liberal-communitarian philosophy. The arguments supporting how this new combined liberal-communitarian thinking can be realised as a sustainable political philosophy begin by my recognising the implicit social dimension to liberal politics. The uniqueness of this new thinking is that it is rooted in the social nature of human beings and the social dimension this brings into politics. At the same time, this liberal-communitarian ideology exemplifies a new

thinking in political philosophy which seeks to address, in a new light, those normative concepts of freedom, rights, justice and equality in line with contemporary political realities.

Undoubtedly, significant insights can be drawn from Kymlicka and other communitarians, such as Taylor, in this liberal-communitarian philosophical stance, particularly their arguments that strengthen the importance of community values to in the achievement of individual self-determination. However, this dissertation draws more on the individual and social aspects of Popper's liberalism for providing inspiration, though implicit, for the establishment of a liberal-communitarian philosophy. More explicitly relevant is Pettit's concept of social holism which lays emphasis on the "I-thou" level of human relations and interactions as the basis for ensuring political rights, freedom and justices. In all of this, what the liberal-communitarian philosophy seeks is a synthesis of two contentious political philosophies. Therefore, the demand of a social dimension to both the politics of liberalism and communitarianism needs to be clearly illustrated to support these contentions.

The first contention is that Popper's form of liberalism is a strand which constitutes both individual and social aspects. This is remarkably different from all other forms of liberal ideologies that portray a philosophy of individualism which emphasises individual autonomy. The social elements in Popper are derived from the inherent principles in his critical rationalism which creates the basis for linkage with other non-liberal ideologies that emphasise social and community togetherness.

For liberals, other than Popper, the focus is with individual freedom in terms of protection from external constraints. These liberals see the primacy of individualism as embodying values whose essence hammers out the "principle of self-interest" or "I do what I want" or "I do what I think is best for my self-interests". This is the central element of most liberal philosophy, and is in line with Ayn Rand's (1905-1982) objectivism which sees objective moral judgement as the pursuit of one's rational self-interest (Abele 2012: n/p).

The liberal conception of rights and freedom considers that the capacity of the individual to determine what is rational as well as the ability of the individual to pursue self-interest are constitutive of objective moral behaviour. This conception stands in conflict with valuing social relations in such a way as embraces the idea that the individual's interests and accomplishments flourish with others within a social community. Thus, the thesis on the social dimension, which is an aspect of Popper's form of liberalism, views such a liberal stance of absolute individuality

without recourse to the values inherent in the social as merely a conceptual abstraction. In other words, the concept of individualism which is detached from the importance of social and community values and instead adheres to individual self-actualisation is rightly considered as an abstraction that has no connection to the real world. The following thought experiment may help to describe such abstraction more clearly.

Suppose, for example, that I am an individual whose orientation about life is to be self-independent and rational about all things that I do, and that I have had the misfortune to find myself on an island alone with two others after the plane we were in crashed into the sea. Without similar experience of living in the wild, there is no guarantee of my survival; either by social interaction with the two others or by living alone according to the capacity of my rational objectivity. It is in this circumstance possible that I will die. Quite possibly however my chances for survival are better if I seek social interaction with the two others. By no means must the individualist live alone in order to be rational. Furthermore, the individualist may choose to cooperate for the purposes not only of his own survival but also for the purposes of mutual survival, taking into account that if everyone survives, then he also does. This is consistent with commitment to selfish individualism. These all are valid notions. However, suppose that the freewill that I possess to choose whether or not to interact with the two others is at the same time sufficient for my self-survival; or suppose, oppositely, that my capacity to survive on the island or even in the larger civilised society does not lie in my being individualistic. In the understanding that interacting with others need not be enough to undermine my individuality- it becomes implausible in every sense of reasoning to continue to lay hold unto my lifelong orientation about individualism, whereas my individualism is not threatened, but I need others to be able to fulfil my capacity for self-interested goals.

What the above scenario clearly expounds is that the individualists could chose to cooperate or not, but their survival may necessarily require cooperation and social interaction. The necessity for cooperation becomes more evident with the argument that each individual might have individual capacities which were necessary for survival but not sufficient unless combined with the abilities of the others.

With this point noted, individualism then becomes a merely conceptual abstraction in both normative and theoretical thinking when it ignores the values of the inherent social nature of human beings and the social character of our minds. This social dimension underpins the

factors determining why humans usually find the need to form political organisations, socio-cultural groups and even political communities. Relying only on such abstraction, which fails to adequately represent the social conditions under which individual self-determination gains meaning may be a source of incoherence in the liberal theory of individual liberty.

In this connection, and in agreement with the inherent social element in Popper's liberalism, it can be argued that the fulfilment of an individual's self-desire is primarily dependent on the social conditions of a given community; that is, a community sets the conditions within which we can pursue effective action. However, this requirement does not undermine individuality; it only promotes the "I-thou" relations among people.

The important element deducible from the hypothetical three persons' island above is that survival on the island depends on the social relations among crash survivors; not on a person's particular culture or on any individual's self-interest. It is the social interaction among the three that may ensure their survival. From this inference, the inherent social aspect of Popper's liberalism is seen to underpin the emergence of a coherent liberal concept that derives support from both the nature of the social character of the self and the social nature of human consciousness. This revised conception promotes a significant degree of inter-subjectivity. The essence of inter-subjectivity here lays emphasis on the intrinsic social nature of the self. Inter-subjectivity in social relations among people stresses that the individual's experience or consciousness is a product of social interaction with others. Inter-subjectivity, seen in this way, relates to subjective (the self) experiences and to how those experiences inherently transcend the individual's sphere of solipsism through the sphere interpersonal relations. This is in the sense that the social nature of the self enables an intermingling of ideas among people which results in the provision of an enabling environment where freedom and other self-desires can attain fulfilment (Ukpokolo 2011: 240).

On the second contention, as I have argued in chapter 7 and extend upon here, the ontological or metaphysical claims about the social nature of the self, and the normative claims about the value of community make intelligible the idea that the self cannot exist outside the context of community, as the consciousness of the self is constituted by its interaction, interconnectedness and interrelationship with others. This is also very true about the social evolution of language.

In his article "Language and The Mind-Body problem: A Restatement of Interactionism", Popper further buttressed the essence of the necessity of social interaction by arguing against

the possibility of a physicalistic causal theory of the human language (Popper 1953, ff. 1962: 293). To Popper, any causal physicalistic theory of human language is a theory of two lower functions of language: the descriptive and argumentative (Popper 1953, ff. 1962: 295). These two can be found in animal languages. However, the theory of the higher function of language is the argumentative and critical. It is with this higher function of language that man is attributed.

With the argumentative and critical higher function of language, Popper remarked that the so-called problem of other minds is solved. Since a physicalistic causal theory of higher function of human language is impossible we must attribute mental states to humans. According to Popper, if we talk to people and argue with them, then we “cannot but attribute to them intentions, and this means, mental states” (Popper 1953, ff. 1962: 297). In arguing with people it becomes evident that other minds exist. We do not argue with a thermometer or a machine (Popper 1953, ff. 1962: 296). So if other minds exist and we argue with them, clearly language is a social affair. Therefore, a doubt cast upon the existence of other minds, become a self-contradiction when it is formulated in a language (Popper 1953, ff. 1962: 297).

So, the existence of other minds in Popper’s theory of Language and Interactionism further demonstrates the implicit but necessary social and communitarian elements in his philosophy. Thus, the contending social aspects of Popper’s politics of liberalism is consistent with the communitarian argument on the nature of the self in relation to the community, which is about how the existence of the community mirrors the consciousness of the self. In that respect, we cannot meaningfully talk of an individual without the consciousness of other individuals in the community. Thus, once we admit the consciousness of an individual self we have to admit the existence of other consciousness. The individual is immaterial; its consciousness is meaningless unless it is enhanced by its interconnection with others. The self-community relation is mutually inclusive and logically symmetrical because both have necessary relations to each other. Both constitute parallel elements, each corresponding to the other. For every individual being there is a correspondence, a parallel in the community. The self and the community exist by an interaction, a social interaction that promotes a social order.

The socio-ontological explanation of communitarianism above defeats liberal philosophy’s commitment to an abstract individualism that bears no connection to the community. It faults liberals’ dedication to individual freedom over community freedom and to individual rights

over common good. Communitarians criticise liberals for their universalising logic of individual rights and individual freedom that have undermined family and social ties in civil society by rendering superfluous obligations to communities, by actively discouraging private efforts to help others (Bell 2012: n/p). Communitarians further berate liberals for their libertarian stance on individual freedom which encourages the erosion of social responsibilities and valued forms of communal life (Bell 2012: n/p). Communitarians, most often, reproach liberals, for instance, for unregulated free-market capitalism which tends to undermine the family, disrupts local communities and corrupts the political process, instead of enhancing communal benefits (Bell 2012: n/p).

Communitarian aspirations regarding the relevance of the community in the self-fulfilment and determination of individuals have appeal. In fact, communitarian arguments for community belongingness find favour among those who argue that the group mind (community) is essential for the actualisation of the necessary social conditions for groups as well as individuals to meet their needs and foster the common good (Ukpokolo 2011:238), it raises concerns over the costs to the basic civil and political liberty of each individual in the group. The concern that communitarianism may descend down the trail of totalitarianism that Popper's political philosophy attempts to resist is a significant challenge. The possibility of such a slide toward totalitarianism comes when "some group of individuals or community leaders attempts to super-impose their own personal feelings and ideas and disregard those of the group or of other members" (Ukpokolo 2011: 238).

In all of this, the politics of liberal-communitarianism underscores a new thinking in political philosophy which accords a more essential social dimension to liberal politics. The liberal-communitarian order would have a bearing on the benefits of economic efficiency in private enterprise and would abate the tendency toward totalitarianism by the degree of openness and accountability that liberalism represents while at the same time drawing on the communitarian ideal of social cohesion which is indispensable to personal development and societal reforms. It is a socio-political order that ensures that both the individual and the community are mutually involved in the process of societal development. This socio-political order is then fortified in its readiness to address the issue of freedom and equal basic rights in such a way that can put a stop to political and economic inequalities in the society. This is imperative in keeping with those features of freedom, rights and equality that Popper describes in his *Open Society*, and is meant to help realise greater openness of society.

At the political level, liberal-communitarianism is to be seen in terms of entrenching the common spirit in social and political organisation as well as strengthening popular participation in policy formulation and state management. With popular participation citizens are able to directly express their views on the political, social, economic and environmental issues affecting them. Jürgen Habermas' (1929- ) idea of the public sphere is relevant in this regard since as “ . . . the vehicle of public opinion it puts the state in touch with the needs of society” (Habermas 1989:31). Most importantly, popular participation in politics does not compromise the critical attitude in politics that Popper describes, rather it enriches it. Popular participation in politics in terms of discursive democracy is critical in its orientation to establish power structures, including those that operate beneath the constitutional surface of the liberal state as it encourages citizen participation in public decision-making, and strengthens commitment of government officials to public accountability (Dryzek 2002:2).

## **Conclusion**

This chapter has been concerned with the prospects for a liberal-communitarian philosophy with aims and objectives that enhance Popper's project of the open society – to the effect that this liberal-communitarianism does not undermine both the capacity of individuals to self-determination and the progress of the community that enhances human relationships. It is with this suggestion that I talk of liberal-communitarianism as another way of expressing the desire to enhance the socio-political nature of human relationships across the plurality and difference of our ways of being, self-understandings, cultures, traditions, and so on.

The discussion of liberal-communitarianism as a political philosophy engages us directly with all the particularities of human experience within contemporary socio-political order. In other words, it presents the truth of the present socio-political reality where the question of what kinds of politics other than liberalism is possible where it is apparent that liberalism has failed, and where communitarianism offered as an alternative may not be appropriate to a political culture which so greatly celebrates individualism. It is based on these factors that I have tried to talk of liberal-communitarianism not merely as a conceptual abstraction but as practicable new thinking in political philosophy, of those notions of freedom, right and equality. Although these notions are commonly seen as essentially linked to individualism within liberal thought, they must also be considered in terms of enhanced relationship towards others in the community.

Looking at those peculiar notions of freedom, right, and equality as they are seen in the general liberal project, I have attempted to consider these notions also within the sphere of enhanced social and community togetherness. This differs essentially from the approach that ultimately grounds freedom, right and equality only upon individualism. The significance of considering these notions, even though they are individualistic in nature, is to reappraise them in a manner that brings to fore the essential elements of the individual and the social in Popper's critical rationalism. A detailed analysis of each of these notions as they apply in the liberal-communitarian philosophy is not the focus in this chapter. However, it is important to have mentioned them as they are the essential features of achieving the open society.

In conclusion, the explicit individual and implicit social elements in Popper's critical rationalism require that the communitarian essence, often neglected in Popper's philosophy, is developed. This is what this dissertation seeks to achieve in a way that ensures that Popper's liberal politics is no longer seen as inconsistent with notions of the common good and enhanced community values for the well-being of individuals. Most importantly, Popper's idea of the social in science and in politics, and his arguments about the social evolution of language that relates to the existence of other minds in his interactionism does seem to me in many ways telling about the communitarian essence of his philosophy. This social essence in Popper motivates my argument about the prospects for a liberal-communitarian philosophy with aims and objectives that enhance his project of the open society.

## Chapter Nine: Conclusion

In the preceding chapters of this dissertation, I have examined and critically discussed the encompassing philosophy of Popper's critical rationalism. I remarked the fact that critical rationalism characterises both Popper's philosophy of science and his political philosophy. In philosophy of science, critical rationalism is the theory of falsification as it relates to how knowledge can be rationally and empirically criticised or put to the test of refutation. In political philosophy, critical rationalism deals with critical feedback from those that are affected by social policies. Certainly, the ideas regarding critical rationalism that Popper addressed in both his philosophy of science and his political philosophy contain mutually supporting characteristics. Surely, there is some value in Popper's attempt to extend lessons from science to politics; the benefit may be as much in understanding what the strengths and deficiencies are in his philosophy of science and seeing how they influence his political philosophy both for good and ill.

Central to the consideration of the mutually supporting characteristics in Popper's philosophy of science and political philosophy are the balanced elements of both the individual and the social aspects. The individual aspect of Popper's philosophy is commonly held to be the core of his philosophy. By contrast, I have emphasised the need to appreciate an implicit social element in Popper. The point here is that as much as there is an explicit individualism that seems to openly characterise Popper's philosophy, there is also an implicit social aspect that is ultimately communitarian both in his view of science and in his view of politics. These individual and social elements form the nucleus of what Popper's critical rationalism encompasses. This point I have made many times in this dissertation.

The starting point for this dissertation was an examination of Popper's intellectual biography. I examined the origins of both his philosophy of science and political philosophy, and how the key personal commitments and life experiences as well as how those intellectual experiences helped to shape the moral core of the development of his philosophy of critical rationalism. Within the development of his thinking, the issue of boldness came together with courage for Popper as this is seen in his audacity to have rejected the seemingly settled philosophies of Plato, Hegel and Marx. However, of significant value in Popper's boldness on how some formerly received norm or idea can be replaced, is a conservatism that behooves one to be on

the one hand critical, and yet on the other hand anti-revolutionary. Popper proposed that we should be bold in both conjecture and criticism but piecemeal in method.

The succeeding chapters on philosophy of science centred on the critical examination of the conceptual and theoretical issues that were raised against Popper's theory of falsification and his insistence on a non-inductive account of corroboration for scientific hypothesis. A critical examination of Popper's idea of how science progresses in chapter 2 demonstrates his commitment to falsificationism and corroboration of theories over against the concept of hypothetico-deductive confirmation. In that chapter, arguments were given to explain why Popper was mistaken to have emphasised only the corroboration of theories and thus rejected the notion of confirmation. The notion of confirmation, he thought, was too closely allied to the idea of the inductive or probabilistic support that a theory can receive from evidence. However, one of the positions that I have taken to support the argument that a theory can also be confirmed by evidence is drawn particularly from the history of science. This support for confirmation of theories rests primarily on how laws can be said to confirm higher level laws; thus Galileo's laws of free fall and Kepler's laws of planetary motion confirmed Newton's more general laws of motion and the law of universal gravitation not only in that the latter laws entail the former laws but also that in a 'bootstrap' way the former laws together with some further quite innocuous seeming conceptual assumptions constrain the interpretation of empirical evidence in a way that allows the latter, more encompassing laws to be deduced. The theory of 'bootstrap' evidencing of theories is deductivist in a way that Popper should commend, but also points past hypothetico-deductivism, and towards the conception of 'evidence for' that officially Popper eschewed.

The conclusions that can be drawn about the legitimacy of evidence *for* theories (that the 'bootstrap' theory shows can be a richer and better defensible concept than that of hypothetico-deductive confirmation that Popper rejected) are often strongly determined by what scientists actually do on a purely pragmatic level. This brings to light some apparent technical difficulties in falsification; in such a way that scientists often protect a theory from falsification, and this protection does not necessarily make the theory unscientific. The case that readily comes to mind is how some scientists held onto Newton's theory and protected it from being falsified in the light of apparent problems with the orbit of Uranus and the Newtonian understanding of the solar system. The prioritised need to attend strictly to the rule of falsifying a theory, as Popper prescribed, would have led those scientists to immediately abandon Newton. However,

what those scientists did was to try to produce a reason why the motion of this planet was not conforming to the predictions of Newton's theory. They postulated a new planet pulling Uranus out of its orbit, and after careful observation, planet Neptune was discovered (Scherzer 2011: 9).

The argument here is that failure to falsify a theory is not unscientific. The failure can be scientifically productive. The main point of note is that it is difficult to determine when scientists precisely can stop to protect theories they believe in from being falsified. It is precisely for this reason that one can argue that if scientists had always attended strictly to the methodology of falsificationism then theories that are today generally considered as good examples of scientific theories would never have been developed. They would have been rejected immediately at birth since even at birth every one of them showed some kinds of anomaly. In any instance of a scientific theory classic upon its first formulation, it is possible to find observable statements that are generally accepted at a time but may be considered incompatible with the theory. In the case that a theory is shielded from falsification scientists often adduce evidence to make its truth improbable. This aligns with the argument on hypothetico-deductive confirmation as it allows evidence to increase the probability of a theory's truth as well.

The core of the argument that I provided is that I reposition Popper's philosophy of critical rationalism so as to establish why well hypothetico-deductive corroborated theories can also be confirmed. I partly use the non-hypothetico-deductive idea of a 'bootstrap test' in order to accomplish this. The reasons why confirmation is possible are two: (a) 'bootstrapping' points past 'guesswork' to a kind of 'detective work' in science that at its best can roundly overdetermine choice of theory in light of evidence and can at the same time instance a particularly severe kind of theory testing; (b) a hypothesis under such severe bootstrap testing can be probabilified by evidence<sup>39</sup>. This second point makes the case that the testing of hypotheses and the legitimate processes of scientific inquiry can be conducted through a plurality of methods. This explains why Popper's critical rationalism has been known to embrace a plurality of ideas, as I have argued more broadly in Chapter 3.

In spite of these well-founded criticisms of Popper's philosophy of science there are still many positive lessons to be drawn from Popper. I showed how one regains Popper's conjecture-and-

---

<sup>39</sup> See elaborate discussions of this in chapter 2

refutation standpoint by stepping up from either 'bootstrap' or Bayesian conceptions to a suitably higher perspective upon how by these methods evidence plays against theories. These positives concerning Popper's philosophy sufficiently effectively demonstrate the significance of Popper's critical rationalism that I seek to retain his hypothetico-deductivism. First, I endorse Popper's criticism of verificationism. Verificationism seeks to explain the difference between science and non-science in terms of the idea of meaningfulness and meaninglessness, using the idea of empirical verification. Popper insightfully rejected the positive notion of empirical verification in favour of the largely negative notion of empirical criticism or falsification. For Popper, scientific method proceeds with the formulation of hypotheses which can be proven incorrect by empirical falsification. The theory of falsification delimits what is scientific, but does not delimit what is meaningful. Popper insightfully rejected the whole attempt to demarcate science from non-science in terms of a theory of meaning. His conjecture and refutation conception of scientific theories shows how scientific knowledge is acquired through severe testing and eventual corroboration. A theory being tested that predicts what is contrary to observation is falsified. A theory that is open to refutation but remains unfalsified remains corroborated for future tests. This is a process of scientific knowledge that Popper described as akin to Darwinian natural selection.

Popper's critical rationalism concerning science and Popper's generalised attitude of criticism inspires his view of appropriate social and political reforms. Popper drew lessons from philosophy of science for political philosophy, in ways that make critical feedback an attitude on the part of everyone in an open society to take criticism seriously and act on it. This attitude does seem to me not in all ways mistaken, and on the contrary seems to me in many ways telling and right. For me, the key lessons are in the role of a critical rationality, effectively directed through a (scientific) community of inquiry, which forms both the individual and social elements that I have retained and deployed in this dissertation on political philosophy.

Although I have variously discussed the problem with the seemingly pivotal (and metaphysical) role of individualism in the social domain by many liberals and ostensibly found in Popper, I have argued in virtually all the chapters in this dissertation that Popper in fact implicitly subscribes to a metaphysics of interpersonal connectedness which I readily endorse. It is with these liberal individual and social aspects of Popper's critical rationalism together that I think society can best move forward. In particular by a conceptual engagement of liberal-communitarian philosophy as a new way of thinking in political philosophy, I believe I can

help Popper speak helpfully to the situation of nations such as those in Africa that are developing, troubled, not essentially liberal, yet are for all these reasons especially needing to mobilise learning by criticism.

Several scholars, including Kymlicka, have also discussed such a liberal-communitarian engagement in political philosophy, their arguments emphasising culture as a basis for political alignment. In particular, Kymlicka locates the basis of liberal-communitarian philosophy within the principle of specific cultural membership of individuals. Instead, the liberal-communitarian philosophy that I defend considers the universal social element inherent to human interaction and interpersonal relationship. Popper is important to the development of this new thinking in political philosophy because of the explicit individualism and implicit social dimension in his politics of liberalism.

Popper's critical rationalism and his politics of liberalism are integral to the liberal-communitarian philosophy. The rationalism of liberal-communitarianism challenges both liberals and non-liberal societies to aspire to intellectual openness. A communitarian society can be liberal in its institutions and become intellectually open in the way Popper prescribed for liberalism. How Popper's form of liberalism can be applied to a society that embraces the idea of common good and community belongingness over against the idea of the self is the challenge that liberal-communitarianism addresses. This is seen in a balance or an equation between Popper's liberal politics and a moderate communitarian ideal without the collectivism that may seem to worry it. Popper was critical of collectivist ideologies but I have provided theoretical justifications and reasonable arguments on why Popper's form of liberalism can be suitably synthesised with the idea of social relations and community belongingness. With this in mind, I demonstrated that my argument on liberal-communitarian philosophy was a new form of political philosophy. Its ultimate aim is to enhance Popper's open society while at the same time entrenching values of social and community togetherness by which the communitarian spirit is known.

## Bibliography

- Abele, Robert. "Individualism and the Failures of Liberalism in America". Centre for Research on Globalisation. 2012. Reference online, 11 April 2013.  
<http://www.globalresearch.ca/individualism-and-the-failures-of-liberalism-in-america/5313830>.
- Ackermann, Robert. "Popper and German Social Philosophy". *Popper and the Human Science*, eds. Gregory Currie and Alan Musgrave. Boston: Martinus Nijhoff Publishers, 1985. 165-178
- Agassi, Joseph. "Methodological Individualism". *The British Journal of Sociology* 11.3 (1960): 244-270.
- Avery, Thomas. "Popper on "Social Engineering: A Classical Liberal View". *Reason Papers* 26 (2000): 29-38.
- Ayer, A.J. *Language, Truth and Logic*, Harmondsworth: Penguin Books. 2001.
- Bartley, William W. III, "Theories of Demarcation between Science and Metaphysics". *Problems in the Philosophy of Science*, eds. Imre Lakatos and Alan Musgrave. Amsterdam: North-Holland. 1968. 40-64.
- \_\_\_\_\_. "Reply to Karl Popper". *Problems in the Philosophy of Science*, eds. Imre Lakatos and Alan Musgrave. Amsterdam: North-Holland. 1968. 113-119.
- Bell, Daniel. "Communitarianism". *The Stanford Encyclopaedia of Philosophy*. Ed. Edward N. Zalta. Spring 2012 Edition. Reference online 12 March 2013.  
<http://plato.stanford.edu/archives/spr2012/entries/communitarianism/>
- Berlin, Isaiah. "Two Concepts of Liberty". *Four Essays on Liberty*, ed. Isaiah Berlin. London: Oxford University Press. 2002.
- Bernstein, Eduard. *Evolutionary Socialism: A criticism and Affirmation*. New York: Schocken Books. 1972.
- Browsers, Michaëlle. "Piecemeal Reform in Plato's Laws". *Political Studies* XLIII (1995): 312-324.
- Bruhl, Lucien Levy. *How Natives Think*, Princeton. N.J: Princeton University Press. 1985.

- Burke, J. Francis. "Reconciling Cultural Diversity with a Democratic Community: *Mestizaje* as Opposed to the Usual Suspects". *Citizenship Studies* 3.1. (1999): 119-140.
- Carnap, Rudolf. "On the Application of Inductive Logic". *Philosophy and Phenomenological Research* 8.1 (Sep.1947): 133-148.
- Cartwright, Nancy. *The Dappled World: A Study of the Boundaries of Science*. Cambridge: Cambridge University Press. 1999.
- Catton, Philip. "Constructive Criticism". *Karl Popper: Critical Appraisals*, eds. Philip Catton and Graham Macdonald. London, New York: Routledge. 2004. 50-77.
- \_\_\_\_\_. "Open Society". *Encyclopaedia of Social Theory*, eds. Austin Harrington, Barbara L. Marshall, and Hans-Peter Müller. Milton Park and New York: Routledge. 2006. 408.
- \_\_\_\_\_. "Is matauranga Maori Science?" *NZ Science Teacher* 120. (2009a): 36-38.
- \_\_\_\_\_. "Hume on induction: nonsense on stilts". *NZ Science Teacher* 119. (2009b): 1-7
- \_\_\_\_\_. "Matauranga Maori Refutes Popper". *NZ Science Teacher* 122. (2010): 38-41.
- \_\_\_\_\_. "Science and Creative Destruction". *NZ Science Teacher* 125. (2011): 4-7.
- Chalmers A.F. *What is this thing called Science?* Queensland: University of Queensland press. 1976.
- Cohen, G.A. *Karl Marx's Theory of History: A Defence*. Oxford: Clarendon Press. 1978.
- Dryzek, John. *Deliberative Democracy and Beyond: Liberals, Critics, Contestations*, Oxford: Oxford University Press, 2002.
- Dupré, John. "The Disunity of Science". *Mind* 92 (1983): 321-346.
- Edmonds, David, and John Eidinow. *Wittgenstein's Poker: The Story of a Ten-Minute Argument Between Two Great Philosophers*. London: Harper Collins. 2001.
- Eidlin Fred "Call to Destiny or Call to Action: Marx, Popper, and History". *The Power of Argumentation (Poznan Studies in the Philosophy of the Social Sciences and The Humanities)* 93, ed. Enrique Suarez-Iniguez. Amsterdam: Rodopi. 2007. 31-54
- Engels, Frederick. *Socialism: Utopian and Scientific*. New York: International

- Publishers. 1978.
- Esfeld, Michael. *Holism in Philosophy of Mind and Philosophy of Physics*, Dordrecht: Kluwer Academic Publishers, 2001.
- Farrell, Robert. "Will the Popperian Feyerabend Please step forward: Pluralistic, Popperian themes in the Philosophy of Paul Feyerabend". *International Studies in the Philosophy of Science* 14.3 (2000): 257-266.
- Feyerabend, Paul. *Farewell to Reason*. London: Verso of New Left Books. 1987.
- \_\_\_\_\_. *Against Method*. New York: Verso of New Left Books. 1988.
- Forrester, Katrina. "Tocqueville Anticipated Me". *London Review of Books* (2012): 42-43.
- Franck, Thomas. "Are Human Rights Universal?". *Foreign Affairs* 80.1 (Jan-Feb. 2001): 191-204
- Freeman, Michael. "Sociology and Utopia: Some Reflections on the Social Philosophy of Karl Popper". *British Journal of Sociology* 26.1 (1975): 20-34
- Gattei, Stefano. "The Ethical Nature of Karl Popper's Solution to the Problem of Rationality". *Philosophy of the Social Sciences* 32.2 (2002): 240-266.
- Gellner, Ernest. *Words and Things: A Critical Account of Linguistic Philosophy and a Study in Ideology*. London: Gollancz. 1959.
- \_\_\_\_\_. *The Legitimation of Belief*. Cambridge: Cambridge University Press. 1974.
- Glymour, Clark. *Theory and Evidence*. Princeton: Princeton University Press. 1980.
- Gorton, William. *Karl Popper and the Social Sciences*. New York: State University of New York Press. 2006.
- Gray, John. "The Liberalism of Karl Popper", *Philosophical Notes* 9 (1976): 1-8
- \_\_\_\_\_. *Liberalism*. Minneapolis: University of Minnesota Press. 1995.
- Habermas, Jürgen. "A Positivistically Bisected Rationalism". *The Positivist Dispute in German Sociology*, eds. T.W. Adorno et al. London: Heinemann. 1976.
- \_\_\_\_\_. *The Structural Transformation of the Public Sphere: An Inquiry into a Category of Bourgeois Society*. Trans. By Thomas Burger, Cambridge

- Massachusetts: The MIT Press, 1989.
- Hacohen, H. Malachi. *Karl Popper-The Formative Years: 1902-1945*. Cambridge: Cambridge University Press. 2000.
- Hayek, Frederick. *Collectivist Economic Planning*. London: Routledge and Kegan Paul Ltd. 1935.
- \_\_\_\_\_. *The Road to Serfdom*. London and New York: Routledge. 1944.
- \_\_\_\_\_. *Law, Legislation and Liberty*. Vol. III. Chicago: University of Chicago Press. 1979.
- Hegel, G.W.F. *The Philosophy of History*, trans. J.Sibree. New York: Dover Publications. 1956
- Hempel, Carl. “Problems and Changes in the Empiricist Criterion of Meaning”. *Revue Internationale de Philosophie* 41 (1950): 41-63.
- Holzgrefe, J.L. “The Humanitarian Intervention Debate”. *Humanitarian Intervention: Ethical, Legal, and Political Dilemmas*, eds. J.L. Holzgrefe and Robert O. Keohane. Cambridge: Cambridge University Press, 2003. 15-52.
- Hume, David. *Inquiries concerning Human Understanding and concerning the Principles of Morals*. Reprinted from 1777 edition, Third Edition, ed. L. A. Selby-Bigge. Oxford: Clarendon Press. 1902.
- Irzik, Gurol. “Popper’s Piecemeal Engineering: What is Good for Science is not Always Good for Society”. *The British Journal for the Philosophy of Science* 36.1 (1985): 1-10.
- \_\_\_\_\_. “Critical Rationalism”. *The Routledge Companion to the Philosophy of Science*, eds. Stathis Psillos and Martin Curd. London and New York: Routledge. 2013.
- Jacobs, Struan. “Tilley and Popper’s Alleged Historicism”. *Philosophy of the Social Sciences* 13 (1983): 203-205.
- Jarvie I.C. “Popper on the difference between the Natural and the Social Sciences”. *In Pursuit of Truth*, ed. Paul Levinson. New Jersey: Humanities Press inc.

1982. 83-107.
- \_\_\_\_\_. “The Development of Popper’s Conception of the Social”. *The Power of Argumentation* (Poznan Studies in the Philosophy of the Social Sciences and the Humanities) 93, ed. Enrique Suarez-Iniguez. Amsterdam: Rodopi. 2007. 15-29.
- Kant, Immanuel. *Perpetual Peace and Other Essays*, ed. Ted Humphrey. Hackett Publishing Company, USA. 1983
- \_\_\_\_\_. *Groundwork for the Metaphysics of Morals* (1785). Trans. James Wesley Ellington. Cambridge, MA: Hackett Publishing. 1993.
- \_\_\_\_\_. *Critique of Pure Reason* (1781). Edited and translated by Paul Guyer and Allen W. Wood. Cambridge: Cambridge University Press. 1998.
- \_\_\_\_\_. *Critique of the Power of Judgement*. Trans. James Creed Meredith. Oxford: Oxford University Press. 2007.
- Kautsky, Karl. *The Economic Doctrines of Karl Marx*. Trans. H.J. Stenning. London: N.C.L.C. Publishing Society Ltd. 1903.
- Keaney, Michael. “The Poverty of Rhetoricism: Popper, Mises and the riches of Historicism”. *History of the Human Sciences* 10.1 (1997): 1-22.
- Kegley, Jacquelyn Anne K. “Peirce and Royce and the Betrayal of Science: Scientific Fraud and Misconduct”. *The Pluralist* 5.2 (Summer 2010): 87-104.
- Kellert, Stephen. “Disciplinary Pluralism for Science Studies”. *Scientific Pluralism*, eds. Stephen H. Kellert, Helen E. Longino and C. Kenneth Waters. Minneapolis and London: University of Minnesota Press. 2006. 215-230
- Keuth, Herbert. *The Philosophy of Karl Popper*. Cambridge: Cambridge University Press. (2005),
- Kramer, Kenneth and Mechthild, Gawlick. *Martin Bubber’s I and Thou: Practicing living dialogue*. New Jersey: Paulist Press. 2003.
- Kuhn, Thomas. “Logic of Discovery or Psychology of Research?” *Criticism and the Growth of Knowledge*, eds. Imre Lakatos and Alan Musgrave. London: Cambridge University Press. 1970.

- Kymlicka, Will. *Multicultural Citizenship: A Liberal Theory of Minority Rights*. Oxford: Clarendon Press. 1995.
- Ladyman, James. *Understanding Philosophy of Science*. London and New York: Routledge. 2002
- Lakatos, Imre. *The Problem of Inductive Logic*. Amsterdam: North Holland. 1968.
- Levinas, Emmanuel. *Humanism of the Other*. Translated from the French by Nidra Poller. Introduction by Richard A. Cohen. Chicago: University of Illinois Press. 2003.
- Levy, David. "Karl Popper: His Philosophy of Politics". *Modern Age* (1978): 151-160.
- Longino, E. Helen. *The Fate of knowledge*. New Jersey: Princeton University Press. 2002.
- Macdonald, Graham. "The Grounds for Anti-Historicism". *Karl Popper: Philosophy and Problems*, ed. Anthony O'Hear. Cambridge: Cambridge University Press. 1995. 241-257
- MacIntyre, Alasdair. *After Virtue*. Notre Dame, Ind.: University of Notre Dame Press, 1981.
- Magee, Bryan. *Karl Popper*. New York: The Viking Press. 1973.
- Marx, Karl. *Manifesto of the Communist Party*. Moscow: Progress Publishers. 1967.
- \_\_\_\_\_. *Economy, Class and Social Revolution*. London: Nelson Publishers. 1972.
- \_\_\_\_\_. *Capital: The Process of Capitalist Production*. Trans. Fowkes. Knopf Doubleday. 1977.
- Mikics, David, ed. *A New Handbook of Literary Terms*. New Haven & London: Yale University Press. 2007.
- Mill, John Stuart. *On Liberty*. Pennsylvania: Pennsylvania State University Electronic Classics Series. 1998.
- Miller, David. *Critical Rationalism: A restatement and Defence*. LaSalle III: Open Court. 1994.
- \_\_\_\_\_. "Some Hard Questions for Critical Rationalism". Being a paper presented at the conference "Rethinking Popper", held at the institute of Philosophy, Academy of Sciences of the Csech Republic, Prague, September 10-14 2007. Paper version 2014.
- Miller, W. Richard. *Analyzing Marx: Morality, Power, and History*. Princeton University Press. 1984.
- \_\_\_\_\_. "Respectable Oppressors, Hypocritical Liberators: Morality,

- Intervention, and Reality”. *Ethics and Foreign Intervention*, eds. Deen K. Chatterjee and Don E. Scheid. Cambridge: Cambridge University Press. 2003. 201-215.
- Morris, Charles. “Pragmatism and Logical Empiricism”. *The Philosophy of Rudolf Carnap*, ed. P.A.Schilpp, La Salle and Chicago: Open Court (1963): 87-98.
- Mulhall, Stephen and Adam, Swift. *Liberals and Communitarians*. Oxford: Blackwell. 1992.
- Neurath, Otto. “Protokollsätze”. *Erkenntnis* 3. (1932): 215-228
- \_\_\_\_\_. “Pseudorationalismus der Falsifikation”. *Erkenntnis* 5.1 (1934): 353-365
- Newton-Smith, W.H. *The Rationality of Science*. London and New York: Routledge. 1981.
- Nola, Robert. “Hypothetico-deductive methodology”. Unpublished. Obtained 2012a.
- \_\_\_\_\_. “Popper’s Theory of Corroboration”. Unpublished. Obtained 2012b.
- O’Hear, Anthony. *Karl Popper: Philosophy and Problems*. Cambridge: Cambridge University Press. 1995.
- \_\_\_\_\_. “Popperian Individualism Today”, eds. Zusanna ParusniKova and Robert. S. Cohen. *Rethinking Popper*. Dordrecht: Springer. 2009. 205-216
- O’Neill, Onora. *Constructions of Reason*. Cambridge: Cambridge University Press. 1989.
- \_\_\_\_\_. “Enlightenment as Autonomy: Kant’s Vindication of Reason”. *The Enlightenment and its Shadows*, eds. P. Hulme and L. Jordanova. London: Routledge. 1990. 184–199.
- Passmore, John. “The Poverty of Historicism Revisited”. *History and Theory* 14.4 (1975): 30-47.
- Peetush, A. Kumar. “Kymlicka, Multiculturalism, and Non-Western Nations: The Problem with Liberalism”. *Public Affairs Quarterly* 17.4 (Oct., 2003): 291-318.
- Peirce, Charles. “Questions concerning certain Faculties claimed for Man”. *Journal of Speculative Philosophy* 2.2 (1868): 103-114.
- \_\_\_\_\_. “The Fixation of Belief”. *Popular Science Monthly*, November 1877. Republished in *Classic American Philosophers*, ed. Marx Fisch. New York: Fordharm,

U.P. 1996

Pettit, Philip. *The Common Mind: An Essay on Psychology, Society and Politics*. New York: Oxford University Press. 1993.

\_\_\_\_\_. "Defining and Defending Social Holism" in *Philosophical Explorations: An International Journal for the Philosophy of Mind and Action* 1.3 (1998): 169-184.

Popper, Karl. *The Open Society and Its Enemies: The Spell of Plato*. London: Routledge and Kegan Paul. 1945a.

\_\_\_\_\_. *The Open Society and Its Enemies: The High Tide of Prophecy: Hegel, Marx, and the Aftermath*. London: Routledge and Kegan Paul. 1945b.

\_\_\_\_\_. "Language and the Mind-Body Problem: A Restatement of Interactionism".

*Proceedings of the 11th International Congress of Philosophy*, Vol. VII (1953): 101-107

\_\_\_\_\_. *The Poverty of Historicism*, London: Routledge and Kegan Paul. 1957.

\_\_\_\_\_. *The Logic of Scientific Discovery*. London and New York: Routledge.

1959.

\_\_\_\_\_. *Conjectures and Refutations: The Growth of Scientific Knowledge*. London: Routledge. 1963.

\_\_\_\_\_. "Remarks on the Problems of Demarcation and of Rationality". *Problems in the Philosophy of Science*, eds. Imre Lakatos and Alan Musgrave. Amsterdam:

North-Holland. 1968. 88-102

\_\_\_\_\_. *Objective Knowledge: An Evolutionary Approach*, Oxford: Clarendon Press. 1972.

\_\_\_\_\_. "Conversation with Karl Popper". *Modern British Philosophers*, ed. Bryan Magee. London: Secker and Warburg. 1973. 66-82.

\_\_\_\_\_. *Unended Quest: An Intellectual Autobiography*, London: Routledge. 1974.

\_\_\_\_\_. "The Logic of the Social Sciences". *The Positivist Dispute in German Sociology*. Trans. Theodor W. Adorno, et al. London: Heinemann. 1976.

\_\_\_\_\_. *The Open Universe: An Argument for Indeterminism*, ed. W.W. Bartley III. London: Hutchinson. 1982.

- \_\_\_\_\_. *In Search of a Better World. Lectures and Essays from Thirty Years.*  
London-New York: Routledge. 1992.
- \_\_\_\_\_. “Models, Instruments, and Truths- the Rationality Principle in the  
Social Sciences”. *The Myth of the Framework: In Defence of Science and  
Rationality*, ed. Mark A. Notturmo. London: Routledge. 1994. 154-184
- \_\_\_\_\_. “Open Society and the Democratic State” (Popper, *Archives* Box 6)  
copied from- Nutturno, Mark. “The Poverty of Economism: Freedom,  
Calculation and the Law”. *Discusiones Filosóficas*. Año 13 N° 20, enero –  
junio. 2012. 57-95
- Ramasesha, S. “Experimental Determination of Avogadro Constant”. *Resonance*.  
(2006): 79-87
- Rawls, John. *Political Liberalism*. New York: Columbia University Press. 1993.
- Riitta, Hari and Miiamaaria V. Kujala “Brain Basis of Human Social Interaction: From  
Concepts to Brain Imaging”. *Physiological Reviews* 89 (2009): 453-479
- Rockmore, Tom. *On Foundationalism: A strategy for Metaphysical Realism*.  
Maryland: Rowman and Littlefield Publishers Inc. 2004.
- Rosslenbroich, Bernd. “The Notion of Progress in Evolutionary Biology- The Unresolved  
Problem and an Empirical Suggestion”. *Biology and Philosophy* 21 (2006): 41-70
- Rothchild, Irving. “Induction, Deduction and the Scientific Method: An Eclectic  
Overview of the Practice of Science”. *Publication of the Society of the  
Study of Reproduction* (2006): 1-11.
- Roubini, Nouriel. “Was Karl Marx Right about Capitalism?”  
<http://www.economicpolicyjournal.com/2011/08/was-karl-marx-right-about-capitalism.html>
- Runes, Dagobert (ed.). *Dictionary of Philosophy*. Totowa, NJ: Littlefield, Adams and  
Company. 1962.
- Ryan, Alan. “Popper and Liberalism”. *Popper and the Human Sciences*, eds. Gregory  
Currie and Alan Musgrave. Boston: Martinus Nijhoff Publishers. 1985. 89-102
- \_\_\_\_\_. “Popper’s Politics: Science and Democracy”. *Karl Popper: Critical Appraisals*,

- eds. Philip Catton and Graham Macdonald. London, New York: Routledge. 2004. 174-188.
- Salmon, Wesley. *The Foundations of Scientific Inferences*. Pittsburgh PA: University of Pittsburgh press. 1967.
- \_\_\_\_\_. *Four Decades of Scientific Explanation*. Minneapolis, MN: University of Minnesota Press. 1989.
- Sandel, Michael. *Liberalism and the Limits of Justice*. Cambridge: Cambridge University Press. 1982.
- Sarkar, Husain. *Group Rationality in Scientific Research*. Cambridge: Cambridge University Press. 2007.
- Sarkar, Sahotra and Jessica Pfeifer. *The Philosophy of Science: An Encyclopaedia*. Vol. A-M. New York: Routledge. 2006.
- Sassower, Raphael. *Popper's Legacy: Rethinking Politics, Economics and Science*. Stocksfield: Acumen Publishing Limited. 2006.
- Scherzer, Otmar. *Handbook of mathematical Methods in Imaging*. New York: Springer. 2011.
- Schumpeter, Joseph. *Capitalism, Socialism and Democracy*. London and New York: Routledge. 1948.
- Senghor, Leopold. "On Negrohood: Psychology of the African Negro". *African Philosophy: Selected Readings*, ed. Albert Mosley. Englewood Cliffs, N.J.: Prentice Hall. 1985. 236-252.
- Sarker, Sahotra and Jessica Pfeifer eds. *The Philosophy of Science: An Encyclopedia*. Vol. A-M. New York: Routledge. 2006.
- Shaw, P. D. "Popper, Historicism, and the Remaking of Society". *Philosophy of the Social Sciences* 1 (1971): 299-308.
- Shearmur, Jeremy. *The Political Thought of Karl Popper*. London: Routledge. 1996.
- \_\_\_\_\_. "Popper's Critique of Free-Market Ideology". *Policy* 24.3 (Spring 2008a): 51-54.

- \_\_\_\_\_, and Piers Norris Turner, eds. *Karl Popper: After the Open Society: Selected Social and Political Writings*, eds. London and New York: Routledge. 2008b.
- \_\_\_\_\_. "Popper the Person". *Unpublished*. 2011
- Sheehan, Helena. *Marxism and the Philosophy of Science: A Critical History*. New Jersey: Humanities Press. 1993.
- Smolin, Lee. *The Trouble with Physics: The Rise of String Theory, The Fall of a Science and What Comes Next*. London: Penguin Books. 2006.
- Song, Sarah. "Multiculturalism". *The Stanford Encyclopaedia of Philosophy*. Ed. Edward N. Zalta. Winter 2010 Edition. Reference online 2 May 2013  
<<http://plato.stanford.edu/archives/win2010/entries/multiculturalism/>>.
- Stanley, William and Nancy Brickhouse. "Multiculturalism, Universalism, and Science Education". *Science Education* 78.4 (1994): 387-398.
- Stelzer, Harald. "Popper and Communitarianism: Ethical and political Dimensions of Democracy". *Karl Popper: A Centenary Assessment*, eds. Ian Jarvie, Karl Milford, David Miller. Vol.1, Aldershot and Burlington: Ashgate. 2006. 231-240.
- Stokes, Geoff. *Popper: Philosophy, Politics and Scientific Method*. Cambridge: Polity Press. 1998.
- Strauss, Leo. *Natural Right and History*. Chicago: University of Chicago Press. 1953.
- Taylor, Charles. *Sources of the Self: The Making of Modern Identity*. Harvard: Harvard University Press. 1989.
- \_\_\_\_\_. "The Politics of Recognition". *Multiculturalism: Examining the Politics of Recognition*, ed. Amy Gutmann. Princeton: Princeton University Press. 1994. 26-73.
- \_\_\_\_\_. *A Secular Age*. Cambridge: The Belknap Press of Harvard University Press. 2007.
- Tesrn Fernando (2003), "The Liberal Case for Humanitarian Intervention". *Humanitarian Intervention: Ethical Legal and Political Dilemmas*, eds. J.L. Holzgrefe and Robert O. Keohane. Cambridge: Cambridge University Press. 93-129.
- Thompson, E. P. *The Making of the English Working Class*. Toronto: Penguin Books. 1991.
- Tilley, Nicholas. "Popper, Historicism and Emergence". *Philosophy of the Social*

- Sciences 12 (1982): 59-67.
- Ukpokolo, Isaac. "Between Group Mind and Common Good: Interrogating the African Socio-Political Condition" *Cultura. International Journal of Philosophy of Culture and Axiology* 8.2 (2011): 235-252
- Valerdi, Richardo. "Heuristics for Systems Engineering Cost Estimation". *IEEE Systems Journal*. (2010): 1-8.
- Van Den Haag, Ernest. "Marxism as Pseudo-Science". *Reason Papers* 12. (Spring 1987): 26-32.
- Veese, H. Aram, ed. *The New Historicism*. New York: Routledge, 1989
- Vickers, John, "The Problem of Induction", *The Stanford Encyclopaedia of Philosophy*, ed. Edward N. Zalta. (Spring 2013 Edition). Reference online 13 June, 2013.  
<http://plato.stanford.edu/archives/spr2013/entries/induction-problem>
- Von Mises, Ludwig. *Economic calculation in the Socialist Commonwealth*. Trans. from the German by S. Adler. Auburn, Alabama: Ludwig von Mises Institute. 1920.
- Walzer, Michael. *Spheres of Justice: A Defence of Pluralism and Equality*. New Jersey. Basic Books. 1983.
- Whewell, William. *The Philosophy of the Inductive Sciences, Founded Upon their History*. 2 vols. London: John W. Parker. 1840.
- Williams, Douglas. *Truth, Hope and Power: The Thought of Karl Popper*. Toronto: University of Toronto Press. 1989.
- Wilson, Edward. *Consilience: The unity of knowledge*. New York: Knopf. 1998.
- Wittgenstein, Ludwig. *Tractatus Logico-Philosophicus*, trans., D. F. Pears. London: Routledge. 1921.
- \_\_\_\_\_. *Philosophical Investigations*. Oxford: Basil Blackwell. 1953.
- Zizek, Slavoj and Costas, Douzinas. *The Idea of Communism*. London: Verso Books. 2011.