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ERSA working paper 632

September 2016

Economic Research Southern Africa (ERSA) is a research programme funded by the National Treasury of South Africa.

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October 5, 2016

Abstract

This paper follows on from the previous one in this series on the incursion of rationalist thought into Christendom. In this paper, I show how the sequence of socio-political events in Europe at the turn of the 16th century provided an opportunistic environment for rationalism to supplant religion as the dominant paradigm for human thought. It gave birth to the Scientific Revolution, the Enlightenment, and their nemesis, the Romantic Movement. All of them sought to assert the primacy of human agency in the process of knowledge generation. But from inception, scientific thought itself was split between the competing claims of both intellectualism and empiricism. After discussing the key features of each episteme, I show how despite considerable efforts in the occidental world to reconcile this bifurcation, none has produced a satisfying synthesis. This dichotomy now abides not only within the individual psyche but also across the entirety of the socio-scientific enterprise and all of its institutions and artefacts. Its implications have been previously described as a watershed in the history of humankind, instituting an intellectual crisis of great import. More importantly for this study, I then juxtapose some of these outcomes vis-à-vis the agenda of Islamic economics and finance, to demonstrate the inherent dissonance between the two systems of thought. Lastly, I introduce the reader to the third and last part of this study, to appear in another edition of this series, where I demonstrate that when mainstream economics fell under the grip of rationalist philosophy, it suffered, as a result, the same fate of atomisation and methodological individualism.

Keywords: epistemology, intellectualism, empiricism, economics, Islamic economics

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[†]The author would like to acknowledge the financial support received for this research from the National Research Foundation of South Africa (Unique Grant No: 92674). Useful comments on earlier drafts by Professor Masudul Alam Choudhury, Professor Geoff Harris, and several anonymous referees are also gratefully acknowledged with the usual disclaimer that the author alone is responsible for any remaining errors of fact, findings, interpretations, conclusions, or recommendations. The NRF shall not be liable to any person for inaccurate information or opinions contained herein.

1 Review of Part I of the Study

In the first part of this study, published in a previous paper in this series (see Mahomedy 2015a), I recounted how, despite the concerted efforts of contemporary Muslim scholars to integrate all of knowledge into a cohesive framework, they have registered little success in doing so. This failure is particularly glaring in the area of Islamic economics (IE henceforth)¹ where it is now being recognised that the crux of the problem lies with the embedding of IE thought within the rationalist framework of occidental² epistemology³ (Sardar 1984, 2004; Choudhury 2006, 2011). To address this issue, I set out to (i) unravel how rationalism came to anchor itself deep in modern⁴ thought and civilisation, and (ii) identify what is so distinctive about rationalism⁵ that renders it inappropriate as an epistemology for the kind of integrative knowledge sought by Islamic economics.

In that first paper, I traced how the Christian West, in its initial engagement with Hellenist thought, was able to subordinate its influence and channel it towards serving as a handmaiden to theology. However, subsequent to its political encounter with Muslim civilisation, European Christian scholarship increasingly came under the influence of rationalist philosophy through the writings of Muslim philosophers and scientists who themselves had appropriated and further enriched rationalist doctrines and principles (see Grant 1997, 2001; Copleston 1957). I finally showed that as this fraternisation increased, attempts at reconciling Christian theology with reason was becoming ever more delicate and contentious. It precipitated some of the most controversial firestorms in the intellectual history of Christianity, for example, the notions of the eternity of the world (emanationism) and the “double-truth” theory.⁶ In the case of the latter, it was asserted that truths could be arrived at separately through reason and Revelation, and could even contradict one another (Kraye 1993; Henry 2000; see also Copleston 1957).

It was these sorts of debates elevated to a doctrinal level that instigated charges of heresy and the Inquisition, and subsequently destroyed hopes for

¹See Kuran (2004), Siddiqi (2004), Choudhury (2008), Zaman (2011), Haneef & Furqani (2011), Salleh (2011), Khan (2013) and Mahomedy (2013) for critiques of the current conceptualisation of the discipline.

²The term “occident” is used to designate the comity of countries of Western Europe (and North America) whose intellectual lineage can be traced back to Greek philosophy and culture (see Comte 1908; Rappoport 1912).

³Refers to that branch of philosophy that explores how knowledge is generated, justified and conveyed to others. See Mahomedy (2015b) for a more detailed exploration of this topic.

⁴The period of modernity, for all intents and purposes, is considered to begin from the early decades of the 17th century (see also Toulmin 1990:8).

⁵Throughout this paper, the term “rationalism” is used in its widest connotation to denote the belief that humankind, by dint of people’s perceptive faculties alone, is fully capable of arriving at all necessary truths; and that man stands not in need of any (external) sources of knowledge beyond the ken of his intellectual and/or sensate abilities, such as divine revelation. This sense of the term therefore includes both the empiricist and intellectualist (i.e., Cartesian rationalist) streams of modernist epistemology. See Mahomedy (2015a:9-11) for a fuller explanation of this sense of the term, contra some of its alternative formulations.

⁶These are attributed to Avicenna and to Averroes, respectively (see Mahomedy (2015a) for further details).

any kind of reconciliation between natural philosophy and theology (Courtenay 1989). It led to the breakdown of the Thomistic synthesis and eventually, the disintegration of Christian scholasticism (Grant 1962; Perry et al. 2008). These intellectual challenges reached their apogee during the 16th century when Averroist thought and other rationalist currents spread rapidly to the leading scholarly centres in Italy and other parts of Europe (Durant 1980; Grant 2001; Hasse 2004, 2006; Carboni 2007). It was primarily the Averroist tradition that formed the crucial link between medieval rationalism and the modern rationalism of “the Libertins” of the 17th and 18th centuries (Gilson 1938:65). It ultimately led to the stand-off between the Church and Galileo, culminating in the latter’s condemnation, which marked for many historians of science (e.g. Draper 1875a; White 1876; cf. Raven 1943), the turning point in the relationship between science and religion in the occidental world.

2 Background and Introduction to the Current Paper

No revolution in intellectual thought – or paradigm shift à la Kuhn (1962) – occurs independently of its context and antecedents. As Häuser (1988:532) reminds us, “the forces shaping an era – its *Zeitgeist*, dominant doctrines, [and] events – influence not only the subject matter and the direction of intellectual and scientific endeavour, but also the *manner* of thinking about it”. This is particularly true when one considers how rationalism came to be fully embraced as the sole guiding philosophy in modern civilisation. How this re-orientation then provided the impetus for the birth of economics as a *science*, and its subsequent development can also be better appreciated, an issue that will be more fully explored in another paper.

2.1 The Socio-Religious and Political Landscape

When the hostility between religious orthodoxy and the new scientific spirit burst open during the 16th century, there were certain socio-religious and political undercurrents that prevailed in Europe at the time that catalysed this confrontation. The ensuing conflicts exposed the deep fissures in the polities of European societies and brought to the surface the underlying tensions that had been simmering for centuries (Lea 1963).⁷ That they all culminated so dramatically at the end of the medieval period and with such consequence, it might well have been one of the most momentous events in Western history.

During this period, for the first time in its history, the Church began to face mounting and public criticisms for many of its incongruous practices, both religious and profane (Tinker 2004; Tuchman 1985; see also Draper 1875b). These attacks were so fierce and of such gravity that they shook the very foundations of legitimacy and trust that the Church had hitherto commanded among the

⁷Lea (1963) traces these to as far back as the 12th century.

faithful. Coterminously, the rising Humanist movement spread rapidly across Europe, and with the secular values that it espoused, it soon begot a political movement that insisted on a separation between the demands of political expediency and the commitment to religious principles (Perry 2010). These challenges to the status quo initiated a crisis of confidence in the authority of sacred knowledge as exercised by the papacy, since for over a thousand years they were used, legitimately or not, to justify the kind of institutional control that the Church demanded from its followers (Draper 1875a; Lea 1963). The crisis deepened when the perception took hold that the Church was unable to defend its literalist interpretation of the Bible vis-à-vis geocentricism against Galileo's telescopic demonstrations of a heliocentric solar system (Draper 1875b; see also Grant 2001).

As the scale of these epistemic and socio-political challenges to Church authority began to increase in magnitude and intensity, Roman Catholicism began to crumble from both within and without (Olson 1991; Tinker 2004; Becker et al. 2016). It ushered in three almost simultaneous revolutions in Europe: the trinity of the Renaissance, the Reformation, and the Scientific Revolution. Each of these transformative waves brought along in their wake concepts and ideas that filled the historical tributaries of rationalist thought, science, and arts, introduced previously into Europe by Muslim scholasticism (see Scott 1904; Haskins 1924; Sarton 1927; Thompson; 1929; Arnold and Guillaume 1931; Briffault 1938). As these ideas dispersed and took root, they provided a Europe decimated by intolerance, rivalry, persecution and internecine warfare, all in the name of religion (Collinson 2003; see also McCulloch 2003), with glimmers of hope to reconstruct itself anew on the basis of a worldview that need not be explicitly religiously grounded.

Perhaps for the first time in its history, Europeans had found the will, and an alternative paradigm (though still rudimentary at that stage), to continue "the voyage of [its] civilisation . . . on an unknown sea" (Draper 1875a:viii). They were willing to venture on this uncharted journey, whatever the outcome, for their then-recent experience with entrusting all affairs to the Church had left them with little else to build on. To many, institutionalised religion itself was to blame for the fratricidal and brutal wars committed in the name of God (D'Holbach 2001; Fiala 2013). All of these developments coalesced to form the melting-pot, as it were, from within which rationalism eventually crystallised and sprung forth as the dominant philosophy of Western society, supplanting the religious narrative that held sway for almost one and half millennia. Henceforth, religion was to be banished to the private domain only, and answers to the most vexing of questions of life and its origins were to be searched for using the tools of human rationality alone. This attitude has ever since formed the lifeblood of human thought and praxis in modern society and continues to colour it in all of its manifestations.

2.2 The Shift in Orientation

The embrace of modern rationalism as a *weltanschauung*, altered in fundamental ways the beliefs and attitudes with regard to humankind, society, morality and nature. Firstly, the erstwhile theocentric worldview was radically transformed into an anthropocentric and then technocentric one (Taylor 1990; see also Germino 1970; Marangudakis 2004). In the process, it shattered the organicist conception of society, reducing it to a loosely-bound collection of highly-individualised, self-centred, and autonomous members (Tawney 1926). Secondly, as an epistemology, rationalism swept aside all other forms of knowing and assumed a universal role in declaring what can be validly claimed as true or casually dismissed as myth, superstition, or falsehood (Sardar 1988; see also Salmon 1978; Toulmin 1990). With this heightened confidence in reason and rationality, morality and ethics became subjectivised and underpinned by a secularising and liberalist value system (Sandel 1982; von Mises 1985; Rawls 1993).

Thirdly, this new sense of self-consciousness and individuality engendered the view that the prevailing social structures built up over several millennia to serve the needs of their communities would henceforth become irrelevant to the newly-emerging social order (see Norberg-Hodge 1995). To accommodate these socio-politico-economic reorientations, many institutional⁸ arrangements were substantially modified, and in some cases, replaced or altogether abolished. Finally, nature was now viewed as an isolated domain of study (disconnected from man) and fully amenable to reason and discovery (Coleman 1995; Russell 1998). It was to be ruthlessly exploited and objectivised as a means to gain power and political control (Bacon 1620; see also Bateson 1973; Merchant 1980; Capra 1982).

All of these changes were of such significance that any one of them could have effected a paradigm shift by itself. But since they were all inextricably linked, they occurred almost simultaneously or in close succession to one another, marking an epochal shift on a scale perhaps unprecedented in human history (see Tuchman 1985; Tarnas 1993). Not surprisingly, such change became a central force drawing towards its epicentre a range of theories from physics (Newtonianism), biology (Darwinism), religion (Protestantism), ethics (Humanism and Liberalism), sociology and history (Marxism), politics (Democracy), economics (Neoclassicism), and the philosophy of science (Positivism). Together, their underlying concepts and presuppositions spawned a mutually reinforcing nexus of ideas, methodologies and policy implications that then radiated outwards and preponderated upon every facet of existence for humankind and nature (see also Weber 1930).

For the purposes of this paper, however, I limit my focus on the epistemological implications of rationalist philosophy for modernist thought, and the sciences in particular. Towards this end, I first explain how the schism between Revelation and reason resulted in the eclipse of the former and the subsequent embrace of rationality to completely remodel human thought itself, from first

⁸I use the word “institutions” throughout this paper in the broadest possible sense as detailed by Hodgson (1998), unless otherwise qualified.

principles. But because of the competing claims to rationality from its early beginnings, it initiated an enduring dualism into all aspects of the socio-scientific enterprise, between and within the various domains of learning. Section 4 traces the sources of these bifurcations to the schools of intellectualism and empiricism that rose to dominance during the Enlightenment. Their divergent, and often conflicting, principles became so entrenched that they crippled attempts even by the great occidental thinkers such as Kant (and later, Husserl) to unify the various domains of human reasoning. The consequences of these outcomes for humanity are elaborated upon in Section 5, and how Islamic economics gets implicated in this is then reserved for the penultimate section. I then conclude and introduce the reader to the last paper in this series, which examines critically the profound impact of these epistemic developments on modern economics itself.

3 Split in the Unicity of Human Thought

As soon as the first cracks began to appear in the unicity of the human intellect during the late Middle Ages (see Mahomedy 2015a), it led to a bifurcation that found anchorage initially in the medieval universities, wherein faculties were divided into the Arts (consisting of Science, Logic, and Natural Philosophy) and Theology, respectively (Grant 2006; Perry 2010). This separation foreshadowed, and pre-empted in a sense, the isolation of state from religion that occurred much later in the Western world. With the sustained undermining and dismissal of the Scholastic effort from the 13th century and the rise of empiricism in its wake, the view increasingly took hold in intellectual circles that theology and the sciences each had to go their own way (Perry et al. 2008; cf. Gillespie 2008).

3.1 The Derogation of Revelation and Ascendency of Rationalist Thought

As the remaining points of contact between scientific thought and religious knowledge gradually weakened and broke off, no unified, common ground between the two remained. Each was considered to belong to a different realm altogether: rational enquiry could, at best, provide only probabilistic knowledge about the world, whilst knowledge of God and His relations with the physical world could be gleaned from Revelation alone. This idea was further cemented with the rise of the Protestant Reformation led by Luther and Calvin (Schaff 1953; Gregory 2008). Certain influential Renaissance humanists whose writings impacted not only on the Reformation but also on Catholicism took this a step further by inveighing against claims to certainty about anything at all (Toulman 1990).⁹ The attitude that marked the eventual rupture between science and religion in Europe is perhaps best epitomised by Galileo's famous words

⁹Although these epistemic positions were perhaps motivated more by the need to counter the rising antagonism and conflict over dogma between the competing branches of Christianity, it undoubtedly set the stage for the re-emergence of scepticism during this period.

that “the intention of the Holy Ghost is to teach us how one goes to heaven, not how the heavens go” (as cited in Finocchiaro 1989:96).

With the rise of Protestantism, there was a shift in the governing values of society away from the Catholic ideal of monastic asceticism towards a “this-worldly” orientation, namely, in the obligation of fulfilling one’s duty in worldly affairs (see Weber 1930; Bartley 1984). This reorientation, together with the delinking of the natural sciences from Revelation, meant that in due course the epistemic status of the former eclipsed that of the latter. With it, the most fundamental axioms and categories of human thought as predicated upon Revelation were being progressively neutralised so that ultimately they ceased to serve as a platform upon which any new knowledge was to be constructed. This presented the Western world with a huge challenge: the profound change in orientation meant that the ways of thought inherited from previous generations had to be rejected or reinterpreted in radically new ways. Simply, all of knowledge had to be reconceived “essentially from scratch” (Holtzman 2003:83).

But how was the newly-emerging modern man to rebuild his knowledge enterprise *de novo*? Where was he going to find the wherewithal to recast in a new mould all knowledge previously recognised as such but not necessarily so henceforth? What essential tools would he require to undertake this kind of reconstruction? And could he marshal the necessary intellectual skills to deploy these tools effectively for the ambitious task ahead? These inexorable challenges to reconstitute the entire knowledge enterprise, independent of scriptural revelation and solely reliant on human agency, set in train a whole series of developments from Bacon and Descartes leading up to Hume and Kant, and from thereon to Comte and Popper. But as the ideas of these leading occidental thinkers took hold, it invariably drove the wedge further and further into the very fabric of human thought in Western society, so that it continues to fray along its innermost fibres till today.

As elucidated in Mahomedy (2015a), Western Europe had been for almost four centuries before the onset of modernity enthusiastically embracing the methods of ratiocination and experimentation as cultivated and enriched by the Muslim-Arab scientists. In the drive to lay a new foundational basis for validating knowledge claims, these were now looked upon to fill the void resulting from discarding scriptural authority that had until then fulfilled this role. Coterminously, the adoption of Newtonianism vis-à-vis the mechanical conception of the universe ideally served the interests of declaring these intellectual tools the sole determining criteria of knowledge (see Dobbs & Jacob 1995; Louth 2011).

It was during this early period in the new intellectual life of Western Europe that the first prophets of modern science, Francis Bacon (1561-1626) and René Descartes (1596-1650), were born. These thinkers, and those who followed in their tradition during the Enlightenment, set about seeking answers to the most fundamental questions of life, existence, and reality, hauling before and interrogating at the altar of reason and rationality almost any and every conceivable claim of tradition, dogma, belief, and prescription, regardless of its source. Isaiah Berlin, in his seminal works (Berlin 1980, 2000a, 2000b) lucidly describes how this exercise, with an almost fanatical zeal and fervour, was ruthlessly ex-

ecuted against the norms of culture and religion established over thousands of years.

3.2 Bifurcation in Scientific Thought

Notwithstanding this newfound confidence in rationality, those who championed its cause differed from inception on the exact nature and source of rational authority (Bartley 1987).¹⁰ The school of intellectualism, led by Descartes, argued that rationality is embedded in the intellect or in reason per se.¹¹ The empiricists, inspired by Bacon, maintained that rational authority lies in sensory experience alone. For the development of science, the first view implies that theory *ex-ante* anticipates observation, and subsequently interprets reality accordingly. On the other hand, the second approach claims that theory could only *ex-post* be induced from observation and experience (Changeux 2005). As a result of these differences, the modern scientific enterprise was itself, at its embryonic stage, split between the Cartesian and Baconian schools of thought, each exemplifying an exclusive claim to the validity of the deductive and inductive methods of enquiry, respectively (see Howard 1994; Dilworth 2007). These differences set the stage for much of the dualistic thinking that was to follow.

Apart from Descartes and Bacon, there is an illustrious line of scientists in this early period such as Galileo Galilei (1564-1642), Johannes Kepler (1571-1630), Robert Boyle (1627-1691) and Isaac Newton (1642-1727), all of whom contributed in significant ways in shaping the form of modern science. But largely, they adopted a methodological approach that falls quite squarely in either the Cartesian or Baconian camps (see Burt 1932). Likewise, the writings and contributions of the traditional philosophers of the occidental world, such as Baruch Spinoza (1632-1677), Gottfried Leibniz (1646-1716), John Locke (1632-1704), George Berkeley (1685-1753) and David Hume (1711-1776), can also be associated more exclusively with either side of the tradition (Bartley, 1987). This dichotomy has continued to endure such that 250 years later, another duo that was to chart the way forward for science in the 20th century, comprising Henry Poincaré (1854-1912) and Albert Einstein, (1879-1955), was still broadly representative of these two epistemic positions (Howard 1994; Dilworth 2007; Castillo 2010; see also Popper 1962). And hence, even within the domain of the natural sciences, a satisfying synthesis between these modes of discovery remains elusive to this day (Scheibe 2001).

In addition to the above-mentioned split (in the natural sciences), there was a corresponding and major intellectual controversy also raging between the practitioners of the natural and human sciences (Mali & Wokler 2003; Kvasz 2012; Suchodolski 1973; see also Kuhn 1962). The explicit agenda of the Enlightenment thinkers to subject claims to validity from every realm of knowledge to the rationalist doctrine continued to intensify the already strained relations be-

¹⁰This was primarily due to the two Graeco-Islamic streams of influence referred to previously (see Mahomed 2015a).

¹¹As captured by Descartes' famous canonical formulation "I think, therefore I am" (Descartes 1985).

tween these two domains of enquiry. Although Wilhelm Dilthey (1833-1911) attributed the divide between them to their differing subject-matters (see Hodges 1952; Overman 1988; McGrath 2006),¹² Berlin (1980, 2000), avers that it was the rationalist imperialism of this period, the “Age of Reason” as the Enlightenment came to be known (see Paine 1880), that set the natural and social sciences on an ineluctable collision course. The propagandists of the new scientific movement, in seeking to impose its positivist élan with all of its attendant principles and methodologies on the humanities,¹³ derided and ridiculed the modes of thought, expression, and areas of inquiry traditionally adopted by its practitioners.

Voltaire (1694-1778), a central figure of the Enlightenment and one of its leading advocates, led the attack on the classical social thinkers of the day, which in turn, unleashed a radical counter-reaction by Giambattista Vico (1668-1744), Johann Georg Hamann (1730-1788) and Johann Gottfried Herder (1744-1803), among others (Mali 2002). The latter group denounced the principles of “uniformitarianism” espoused by the Enlightenment scholars (see Lovejoy 1948) as untenable and invalid. They decried, inter alia, the very idea of a universal and objective interpretation of reality and rejected outright the imposition of the scientific method across all branches of knowledge. This hostility and revulsion against the hegemony of the rationalist tradition provoked the emergence of the Counter-Enlightenment or Romantic movement (Berlin 2001), with the ensuing polemic only serving to further alienate the arts from the sciences. In his classic work, *The Two Cultures and the Scientific Revolution*, Snow (1959:3-4) warned that this “gulf of mutual incomprehension” between them threatened to “split into two polar groups [the] . . . intellectual . . . (and practical) . . . life of the whole of Western society”.

That these underlying tensions persist even into our contemporary times is evident from the so-called “Science Wars” of the 1990s that flared up, once again, between the natural and social scientists. This time round, however, following the publication of Kuhn (1962) and soon thereafter, the provocative work of Feyerabend (1975), it was the natural scientists who felt slighted by the critique against current scientific practice, and fired the first salvo at the sociologists (see Gross & Levitt 1994). Each faction, galvanising its members to articulate the most forceful of arguments, then sought to defend its position against the other (Ashman & Baringer 2001; Parsons 2003). Notwithstanding the sophistication of the most recent debate, even a cursory glance at the issues at stake reminds one of the striking similarities of substance exemplified in these current disputes with those that occurred over 250 years ago.

¹²See Hodges (1952) for a fuller explication on why he considered these two disciplines disparately.

¹³Such as History, Sociology, and Anthropology.

4 Sources of Dualist Thinking in Modernist Epistemology

How then does one account for this intractable problem of a deep schism in modernist thought, and one that continues to bedevil the occidental world in all of her other developments? Although traces of dualism in its various formulations can be found in Aristotle (Furley 1999), Plato (Emilsson 1999), and early Hinduism and Christianity (see Rahman 1994), it became the default mode of thinking after the entrenchment of rationalist philosophy in the West, particularly after Descartes. Its penetration into modern science is likewise discernable from across the spectrum of leading occidental scholars who have contributed to its underlying epistemology (see Popper 1957; Brodbeck 1958; Buchanan 1960; von Mises 1978).

Clearly, it is not possible to elaborate on all of their ideas in a study of this nature. But there are certain common themes that cohere to form a core which support their underlying assumptions. In all of these meta-theoretical conceptions, the “strange dualistic epistemology characteristic of occidental civilization” (Bateson 1973:327) emerges in different forms, serving to clarify why they engender within the modern psyche an abiding sense of competition and conflict.

Towards this purpose, I therefore focus on the basic principles of knowledge associated with each of the two leading epistemai, namely, intellectualism and empiricism that have, coincidentally, also dominated economic thinking. This discussion then examines efforts to reconcile their competing claims. More importantly, I then explain how they have come to alter so fundamentally the very nature of human consciousness and what this implies for IE.

4.1 The Intellectualism of Leibniz (and Descartes)

Gottfried Leibniz, together with Spinoza, belonged to the school of intellectualism founded by Descartes. Due to their emphasis on the supremacy of reason, these intellectualists are sometimes referred to as the “early rationalists” of the modern era (see Polanyi 1958; Gellner 1995). There are certain ideas shared by these scholars and their adherents about the nature of the world, knowledge, and human nature, which coalesce to form a distinct philosophical school in its own right. Since these presumptions are all interrelated, I examine how they have impacted on their notions of knowledge and the centrality of reason. Within the sub-text of their ideas, one can clearly discern the postulates of economic science that materialised later, as shall be discussed in a subsequent paper.

The intellectualists, firstly, believed in an ordered universe that had a rational structure.¹⁴ It was governed by universal principles that applied to both the inanimate and animate worlds, including human beings. This view imposed a kind of “uniformitarianism” on humankind, in which any kind of variety and

¹⁴This belief itself can be traced back to the Peripatetic school of Ancient Greek Hellenism (see Bakar 1991; Mahomedy 2015a).

“differentness of men” was attacked and dismissed as illusory (Lovejoy 1948:79-81). These universal principles were, furthermore, fully amenable to human discovery through the appropriate use of the intellect. As necessarily implied by Leibniz’s “Principle of Sufficient Reason”, everything has a reason, and anything, therefore, in principle, is intelligible and can be explained (Leibniz 1956). But only those minds that were well-prepared in the use of the correct method could discover these truths through the processes of adopting “hypotheses”, “assumptions”, and “models” (Coleman 1995:4).

Secondly, Descartes was the first to emphasise a distinct and unbridgeable divide between mind (*res cogitans*) and matter (*res extensa*), arguing that the two were of fundamentally different substances (Descartes 1927). To him and his co-intellectualists, Leibniz and Spinoza, *res cogitans* and *res extensa* could not conceivably have any causal interaction with each other, leading to the classical mind-body dualism. Despite several attempts over the centuries to re-unify these supposedly divergent realms, none has produced a satisfying synthesis so that this divide continues to persist within modern science until today (Sheldrake 2013). This dualism, as initiated by Descartes, is believed to have facilitated the development of modern science as a supposedly objective, neutral, and positivistic knowledge-seeking enterprise, since it separated out the *thinking* subject from the perceived *object* (Velmans 2009).¹⁵

Based on the above sets of axioms, it was, therefore, possible to establish the sciences of nature, including the study of human beings (and their happiness), since the universal laws that regulate them are uniform and generalisable. Within this scheme of knowledge, reason must, therefore, play a fundamental role, wherein it is applied only to those ideas that are “innate, clear and distinct”, and not riddled with any kind of ambiguity or doubt (see Curley 1986:153).¹⁶ In this way, the process of knowledge acquisition begins with “principles” that are “are so evident that they need only to be *understood* to be believed” (Descartes 1985:I, 145). By then manipulating these evident principles using deductive logic, an indefinitely large range of more particular results could be demonstrated (Coleman 1995). On the contrary, any claim that could not meet the twin criteria of “clarity” and “distinctness” has no truth value.

The way to arrive at this kind of certitude, as required by the early rationalists, was through the use of mathematics. For them, all of nature could be adequately explained with the clarity of mathematical language and techniques (Berlin 2000; see also Garber 1978 in Capra 1982). Unsurprisingly, Descartes and Leibniz contributed significantly towards developing the relationship between geometry and algebra, with the latter being credited for discovering infinitesimal calculus independently of Newton (Jesseph 1998). Moreover, because any notion of truth had to be established a priori from “innate ideas”, the intellectualists were thoroughgoing deductivists. The axiomatic nature of both deductive logic and mathematics strengthened their faith and confidence in *apri-*

¹⁵Recent developments in quantum physics has, however, now challenged his non-interactionist relationship between the two (see Stapp 2007).

¹⁶Consequently, such ideas had to be complete and etched into the very fabric of the human mind.

orism. This also led to them deprecating the inductive method, for they argued that independent of reason, experience could never assent to any propositional claim (Leibniz 1969). Consequently, the knowledge yielded by the senses alone was considered, at best, to be weak and superfluous (Leibniz 1981).

4.2 The Empiricism of Hume

Contrary to several theses of the intellectualists, the empiricists are a group of philosophers/scientists who assert that all knowledge derives primarily from experience only, i.e. sensory perception. To varying degrees, they derogate the role of reason *per se* in the process of knowledge creation, and thus emphasise the importance of sensation.

The empirical basis of knowledge, as a comprehensive theory, was perhaps most articulately developed by David Hume, a Scottish philosopher eminently recognised for his radical empiricism (and scepticism), arising out of his adherence to the tradition of British empiricism (Priest 2007). In his influential writings, Hume (1896, 1902, 1998) emphatically upheld that all knowledge is ultimately not only founded but also limited to experience alone. Reason, in contraposition to the intellectualist tradition, performs only a perfunctory role. Of and in itself, it is unwilling. As Hume (1896:415) argued, “reason is, and ought only to be the slave of the passions, and can never pretend to any other office than to serve and obey them”.

Hume, therefore, premised all of knowledge on experimental grounds that have sensate ontological origins (Hume 1896, 1902; see also Gordon 1990; Choudhury 2014). Accordingly, this knowledge takes the form of impressions emanating from our sensations and/or emotions, which produce (initially) simple ideas within the human mind. These simple ideas may then compound, aggregate or transpose to form complex ones.¹⁷ There is, furthermore, an exact one-to-one correspondence between our simple sensual impressions and the ideas that we form of them in our minds (Hume 1896). It is through this basic process that the sum-total of our concept formation and knowledge acquisition develops and grows. Any idea or concept, e.g. metaphysical notions, which cannot be traced back to a sensual experience is therefore simply spurious (Hume 1902).

But, as Hume (1896) further contended, our faculties of reason and sense observation are also not infallible; they are prone to error and illusion. Therefore, the kind of certainty that the intellectualists averred that we could attain was rejected by him outright. Because of our inherent human frailties, we can never be sure that what we (claim to) know is objectively true: “by this means, all knowledge degenerates into probability” (Hume 1896:180). Following on from this, we can thus clearly identify why Hume so emphasised the inductivist philosophical approach in gaining whatever understanding we may possibly have of the world (Choudhury 2014).¹⁸

¹⁷For example, if we imagine a red apple, we combine the ideas of the colour “red” and the object “apple”.

¹⁸An understanding which does not necessarily translate into true knowledge.

A similar situation prevails with regard to causality. Hume famously argued that what we assume to be a causal relation between two events is merely their occurrence in spatio-temporal succession to each other. Nothing more can be attributed to them by way of “any power or necessary connection . . . [or that] the one [is] an infallible consequence of the other” (Hume 1902:63). This is because since no distinct *impression* of an actual causal relation between the two is conveyed to us, we cannot logically assert the idea of causation. All that we observe is a conjunction of events contiguous in time and space. It is merely the constancy and repetitive nature of the succession of these events that habituates the mind into believing that the prior one “causes” the succeeding one to occur. That a causal relation between the two does exist, we can never know with certainty. In fact, for Hume, therefore, the entire universe is contingent and not necessary for “the power or force, which actuates [it], is entirely concealed from us” (Hume 1902:63).

This perspective of Hume on the nature of causation and its consequential “problem of induction” is indeed profound. It means that there is no *logical* necessity for nature to “obey” universal laws and, therefore, to have order or any form of systemic structure. If anything, the universe may well be a heap, as suggested by some empiricists such as Jean-Baptiste Dubos (Coleman 1995). But if nature is not necessarily regulated by general laws as typically assumed and abstracted by the human mind, then the implications for epistemology are equally sombre. It means that no aspect of our knowledge whatsoever can ever be justified (Priest 2007), nor could we even postulate a world outside of ourselves or a “self” outside of it in the first place (Sardar 1988). All that we can ultimately attest to vis-à-vis reality are our sensations of it, and no further (Mach 1959).

The above discussion serves to highlight that when the fundamental premises about knowledge à la intellectualism and empiricism are extended to their logical conclusions, they lead to radically divergent outcomes, both for epistemology and ontology. On the one hand, because the intellectualists accentuate structure and reason, they are predisposed towards *apriorism*, deductivism, and certainty. The empiricists, in contradistinction, disparage these notions and emphasise, instead, disorder and sensation, which lead them towards *aposteriorism*, inductivism, and indeterminacy. Although reason and sensation are not essentially incongruent to each other, they have become disparate as partitioned systems of thought within rationalist philosophy.

These differences also highlight the intricate linkage and reciprocity between conceptions of knowledge (epistemology) and views about the nature of reality (ontology). As will be explained in the last paper of this study, they have also played themselves out in much of the discussion on economic theorising, leading to an “abiding schism in [the economics] profession” and the ensuing crisis that followed in its wake (Rostow 1986:2).

4.3 Kant's Attempt at Synthesis and its Outcome

One of the most outstanding thinkers of 18th century European Enlightenment, Immanuel Kant (1724-1804), recognised the limitations of the intellectualists' and empiricists' assertions of knowledge emanating exclusively from reason or experience alone, respectively. Kant proffered that it was neither the complete innate ideas of the mind, nor sensate experiences, on their own, that could yield new knowledge. Accordingly, he attempted to reconcile claims of the a priori with that of the a posteriori (Kant and Friedrich 1949; Scheibe 2001; Priest 2007). He did this by suggesting that the mind a priori possesses certain inherent structures¹⁹ such as space, time, and causality, which it necessarily imposes upon nature (Kant 1902). Our sensual experience of objects then actuates these structures by providing them with content, which subsequently enables us to intuit the world, i.e. we apprehend reality through our senses and gain an understanding of it through *thinking* it. This interaction between the intellect and experience, for Kant, was fundamental for knowledge creation, since "thoughts without content are empty; intuitions without concepts are blind" (Kant 1929:93).

Despite the intellectual advances of these ideas in unravelling how knowledge might be generated, even the genius of Kant was unable to satisfactorily unite the two dominant and competing epistemai of knowledge. Because the mind, with its subjective structures and categories,²⁰ imposes itself on the objects of perception, we could still never know things as they *are* but only as they *appear* to us: "the human being knows not the world-in-itself but rather the world-as-rendered-by-the-human-mind" (Tarnas 1993:417). Consequently, there still remained an unbridgeable gulf between subject and object, as one could never ascertain the degree of correspondence between perception and reality (see Kant 1929:267). As Choudhury (2010) so adroitly demonstrates, this problem of Kantian heteronomy²¹ stems from his failure to causally link the noumenal world of essences, inhering in the realm of pure reason, to the phenomenal world of appearances, which belongs to the province of practical reason. Kant's world thus remained divided between noumena and phenomena, i.e. between pure reason and practical reason and consequently, between the a priori and the a posteriori (Windelband & Tufts 1901).

It is noteworthy that Kant's efforts and subsequent failure at synthesis (see Bartley 1984; Israel 2009) also impacted on his conception of the nexus between God, man, morality, and science. Firstly, in his *Critique of Pure Reason* (1929), Kant argued that the existence of God and other metaphysical notions could not be rationally understood and were thus incognisable and beyond the grasp of the human mind. Because God was not intuitable, He could not play any perceptible role in the workings of the universe. This then led Kant to derogate all acts of worship including supplications and prayer to God, claiming that they fulfilled only a narrow, subjective and self-gratifying purpose (Kant 1931).

¹⁹Note: not complete ideas, as asserted by the intellectualists.

²⁰As perceived by Kant, on the presuppositions of Newtonian physics (see Popper 1962).

²¹See Carnap (1966).

Secondly, Kant's partitioned view of knowledge vis-à-vis reality alienated God altogether from the study of the physical world as well. Nature and morality, and by extension, the positive and normative, in his epistemology, remained dichotomised, heralding the permanent divorce between science and religion (Windelband & Tufts 1901; Dampier 1961; Gregory 2008). Kant, nonetheless, did acknowledge that a commitment to morality necessitated belief in God. He felt logically compelled, though, to attribute this connexion to the use of reason alone, and not Revelation, because of the unbridgeable chasm between his pure and practical reason (see Kant 1931). In the process, Popper (1994:132) writes, "Kant humanized ethics, as he had humanized science".

Subsequent to Kant, Edmund Husserl (1859-1938) also sought through his project of phenomenology to unite the domains of noumena and phenomena (Husserl 1931). But he recognised that there had to be a third unity, that of "consciousness", which was required to link the two together. This, he believed, was clearly absent in Western epistemology. Husserl (1935:3) thus wrote:

Blinded by naturalism, the practitioners of humanistic science have completely neglected even to pose the problem of a universal and pure science of the spirit and to seek a theory of the essence of spirit as spirit, a theory that pursues what is unconditionally universal in the spiritual order with its own elements and its own laws. Yet this last should be done with a view to gaining thereby scientific explanations in an absolutely conclusive sense.

As Choudhury (2004) explains, had Husserl succeeded in incorporating the unity of divine knowledge into this project, it would have marked a major breakthrough in occidental philosophy.²² His vision, however, never materialised in his lifetime, but he hoped that others would bring it to fruition (Husserl 1931). No other major figure in the Western world has accomplished the kind of systemic unity required, though it remains an undying quest of the scientific community (Choudhury 2000; see Barrow 1991; Weinberg 1994; Hawking 2002).

Having reached this impasse, we find that the radical mind-body dualism initiated ontologically by Descartes reached its full consummation, epistemologically, in Kant (Cottingham 1993; Tarnas, 1993). This Cartesian-Kantian paradigm has split all of occidental thought into categories of opposing dualisms and dichotomies (Bateson 1973; Garaudy 1985; Sterling 2003; Tinker 2004; Sheehan 2007; see also Dampier 1961; Husserl 1970).²³ The unbridgeable divide at the epistemic level, i.e. between the *a priori* and *a posteriori*, deductive

²²In a similar effort, Max Weber (1864-1920) also tried to mediate between the empirical/historical method of Schmoller and the positivistic approach of Menger (see Mahomedy 2015c), but his objective in this particular exercise was not as ambitious as that of his predecessors or contemporaries (see Kim 2012; Hart 2010; cf. Reuter 2006).

²³Not surprisingly, it has therefore had a lasting impact on Darwinian or Lamarckian theories of biological evolution (Campbell 1987), as well as on Marxian theories of societal change (see also Resnick & Wolff 1987). With both Darwin and Marx, nature and reality, and consequently knowledge thereof, continuously evolve and emerge from the competition and conflict of the processes that constitute their totality.

and inductive, and intelligible and sensate, leads by necessity to a corresponding schism at the ontic level, i.e. between the one and many, quantity and quality, and form and substance. This, in turn, transmits, at the relational level, to an irreconcilable tension between theory and practice, fact and value, and microcosm and macrocosm. All of these artificial bifurcations have been so extensively and deeply polarised within socio-scientific thinking that no field of human endeavour has escaped its abiding duality.

5 The Final Eclipse of Religious Thought and its After-effects

During much of the 20th century, from the rise and fall of positivism/neo-positivism (see Suppe 2000; Van Fraassen 1980), pragmatism and instrumentalism (see Dewey 1903, 1938) to Popper's critical rationalism (see Bartley 1982), and then towards the epistemological nihilism of postmodernism (see Rosenau 1991; Leffel 2000), all have largely been a consequence of, or a response to, the intellectual fragmentation described above. None of them, however, has been able to satisfactorily transcend its dialectical entrapments. If anything, they have only sunk deeper into the whirlpool of indeterminacy and/or relativity.²⁴

Why then have the cumulative efforts of some of the greatest minds in the occidental world not enabled any kind of convergence towards integrative thought? How does one adequately account for the fact that every subsequent attempt to do so succumbs to, becomes paralysed by, or even positively contributes towards, further atomisation? What has characterised the socio-intellectual milieu, i.e. its *Zeitgeist* from the inception of modernity that has rendered intra-and-inter-scientific systemic unity within knowledge so elusive? And how does all of this resonate with the "the disenchantment of the world" (Weber 1946:155); with the increasing sense of alienation and breakdown of human solidarity that modern society experiences at every level?

Apart from Husserl, others in the West (e.g. Weber 1930; 1946; Bateson 1973; Capra 1982, 1988; Toulmin 1990; Tarnas 1993; Sheehan 2007) have also recognised that there is something about the contemporary experience of man, unprecedented throughout history perhaps, of a sense of self-awareness, of something that penetrates to the very core of the human personality, that has instituted this "crisis [that] has been several centuries in coming" (Sheehan 2007:3).²⁵ It is to this fundamental problem, which helps to deepen our understanding of this profound dilemma, that I now turn.

It has to be remembered that all of the dramatic changes in human intellection, as described in the preceding sections, occurred in the interlude between

²⁴See for example, Popper's (1962, 1987) "impossibility of truth/certainty" thesis.

²⁵It is apt to recall at this juncture that the seeds of this crisis were in fact planted much earlier than what is often recorded. As pointed out by Gilson (1938), Copleston (1957) and Beum (1975), and more recently explained by Mahomedy (2015a), Muslim scholarship had long before the decline of feudalism and the advent of the Scientific Revolution already steered Latin Europe onto the pathway of adopting rationalism as its guiding philosophy.

Descartes and Kant, a mere 150 years. In its aftermath, it radically overturned the erstwhile theocentric European worldview and transmuted it into an anthropocentric one. From this emerged two auxiliary epistemic changes; one certainly envisioned, whilst the other, in response to the first, more likely than not, an unintended consequence.

5.1 Doctrine of the Autonomous Self

Notwithstanding all of the fundamental differences and deep divisions that have been wrought upon humankind ever since its liberation “from the ancient and medieval cosmic womb” (Tarnas 1993:416), there has always been one underlying value that has galvanised all those who contributed towards the project of modernity to pursue it so single-mindedly. It was, as Toulmin (1990:9) reminds us, “the shared assumptions about [the primacy of] rationality” in “deal[ing] with the problems of human life and society”. As the pace of this secularisation increased, God and religion gradually receded from human consciousness so that they were to play no decisive role in directing the temporal life of humankind henceforward.

Man was deemed self-reliant in the task of charting the way forward for himself (Popper 1994). He was independent of all else. His perceptive faculties, whether of empiricist or intellectual origins, were not in need of any external guidance whatsoever. The fervour that characterised this new-found confidence in the self-sufficiency of humankind was most forcefully expressed by none other than Kant. He proffered that this defining moment signified “nature’s emancipation of mankind from alien guidance” (Kant 1784:1). More disparagingly, he referred to man’s need for any counsel beyond the ken of his own abilities as

self-imposed tutelage, due not to lack of understanding, but to lack of courage or determination. Laziness and cowardice would cause him to [otherwise] remain under this lifelong tutelage. Sapere aude! Dare to use your own understanding is the battle-cry of the Enlightenment! (Kant 1784:1)

As indicated previously, this “Age of Reason” reached its apogee in the rationalist crusade of the Enlightenment. It provoked, in turn, Romanticism, which argued as vehemently for the validity of personal intuition, instincts and feelings in interpreting human conduct.

Paradoxically, both of these movements, in seeking to negate the ideas of each other, delivered a common outcome: the deification and immanence of the human being. Human autonomy and agency, and all that went with it vis-à-vis human values, rights, freedoms, etcetera, were to reign supreme. There was to be henceforth no higher authority or reference point beyond the subjective human self, nor any system of values that could supercede those that enshrined human interests. Human beings, therefore, self-reliantly, were to set the norms for both thought and behaviour so that they became the loci to which everything else was to be subservient. With this glorification and magnification of the individual

self,²⁶ it was only inevitable for there to arise in its wake, the kind of extreme atomism and methodological individualism that has become a defining feature of all of modernity, its institutions, and artefacts.

The pluralism that this individualistic and Lockean view of humankind spawned became the womb from within which a deluge of *isms* sprouted: Egalitarianism, Liberalism, Fascism, Marxism, Nationalism, Capitalism, Socialism, Parliamentarianism, Developmentalism, Anarchism, Nihilism, etc. Despite the apparent differences among these ideologies, all of them have a common cause: the human being defines what is. Even God and religion, within this *weltanschauung*, could only be tolerated to the extent that they may serve private individual or collective human interests. But from the public realm, where it mattered most, they were to be kept at bay, lest they reappear and again preponderate over humankind's destiny.

After Auguste Comte (1798-1857), the founder of positivism,²⁷ the tide began to turn even more zealously away from an a-religious sentiment, at best, towards a distinctly anti-theological tone (Comte 1908:444; see also Ferngren et al. 2000). In the self-same spirit of Kant, Comte declared that knowing God was wholly beyond human comprehension, and following thereon, he likewise fully humanised morality and ethics (Cashdollar 2000). But Comte's humanism was far removed from the crude individualistic and self-oriented humanist values more commonly associated with the English liberalist tradition. His was distinctly devoted to loving and serving humanity at large. He asserted unequivocally that the monotheistic faiths, particularly Christian Catholicism, despite all of their pietistical claims to social sympathy, had dismally failed to achieve social cohesion (Comte 1908:388-389). For Comte, therefore, the love of God and service to Him and His religion had to be repudiated so that it may give way to the love of, and service to, humanity, under the auspices of his new "Religion of Humanity" (Comte 1908:355-444).

Comte's new religion was to be robed in the positive methods of science (Comte 1853). It nurtured the idea of a "social physics", which Comte believed would cohere with the natural sciences in unveiling the fundamental forces that act on both the natural and social orders (Overman 1988). He is thus credited with not only classifying the various natural sciences into their disciplinary boundaries but also for founding the separate disciplines of sociology and an-

²⁶John Donne (1572-1631), one of the English world's greatest writers had captured this individualist spirit in one of the most elegant expressions of poetic language. It would not be out of place to quote him here (from Toulmin 1990:iv):

'Tis all in peeces, all cohoerance gone;
All just supply, and all Relation:
Prince, Subject, Father, Sonne, are things forgot,
For every man alone thinks he hath got
To be a Phoenix, and that there can bee
None of that kinde, of which he is, but hee.

²⁷See, however, Mill (1836), who records that Comte himself regarded Bacon, Descartes, and Galileo as the original founders of Positivist philosophy.

thropology (Urbanowicz 1992). Comte, furthermore, predicted that as these sciences mature to their full bloom, the Enlightenment would eventually overthrow religion altogether and supplant it with the scientific enterprise as the final stage in the knowledge process (Comte 1853). In so doing, Comte formally deified both, humanity as “the new Supreme Being” (Comte 1908:369), and the expression of human knowledge as Positivist science (Comte 1853).²⁸

And so, by the time of Friedrich Nietzsche (1844-1900), God and religion were completely effaced from science, except as objects of study and analysis. Nietzsche (2001:120), in “eulogising” the loss of God declared

God is dead. God remains dead. And we have killed him. How shall we comfort ourselves, the murderers of all murderers? What was holiest and mightiest of all that the world has yet owned has bled to death under our knives: who will wipe this blood off us? What water is there for us to clean ourselves? What festivals of atonement, what sacred games shall we have to invent? Is not the greatness of this deed too great for us? Must we ourselves not become gods simply to appear worthy of it?

5.2 From Dualism to Pluralism - Rationality turns on its Head

After a turbulent 150 years of intellectual strife, and finally after dethroning God and assuming the mantle of “godship” (à la Nietzsche), what lay ahead for humanity then, vis-à-vis its understanding of the world? It is here that we encounter a second profound outcome of the promise of rationalism to deliver to humankind a worldview based exclusively on rationality and science, and “cleansed of the onerous burden” of Revelation and belief in a Divine authority. In driving religion to the margins of society, rationality was unequivocally expected to replace the role that Revelation had hitherto served in providing all of the answers required for human fulfilment. But, as this agenda was resolutely pursued, an increasingly forlorn conclusion soon emerged that rocked the foundations on which the entire enterprise was instituted.²⁹

Notwithstanding all of the hype around humanity’s newfound confidence in its innate abilities, paradoxically, it was the very same tools of rationality that confirmed that rationality itself was by its own standards, also found wanting and severely limited. Kant (1929) and Hume (1886), for example, quite early on demonstrated unambiguously the vulnerabilities to error and illusion that both reason and experience were open to, respectively, in yielding objective knowledge. These critiques, and the many that followed thereafter (see e.g. Dewey 1903; Ayer 1956; Popper 1962, 1987, 1994; Wittgenstein 1969; Quine 1969, 1981; Heidegger 1978; Bartley 1987), had culminated in an epistemological crisis of great significance. They all arrived, *rationality*, at the same denouement:

²⁸But Kant, by humanizing science and simultaneously recognising human frailties, remained modest in claiming too much for science; he still left a gap for God to play some role in human affairs (see Palmquist 2009).

²⁹See also Taylor (1990, 1995).

since all of humanly-derived knowledge is, of necessity, only interpretive, we could never know with any degree of certainty about the true nature of anything at all.

Revolutionary developments in quantum physics, anthropology, cognitive psychology and neurophysiology, have all been interpreted to shore up this notion of a subjective reality. From Marx, Freud and Weber to Heisenberg, Kuhn and Foucault, all concluded that the world is nothing but a human construct in which “every act of perception and cognition is contingent, mediated, situated, contextual (and) theory-soaked” (Tarnas 1993:418). Meaning, therefore, does not inhere in objects themselves but only as projections of the human mind. Since there is no more an *objective* world to be examined and analysed, whatever we do observe, and record as data or information, is merely an ordering of impulses as per our individual, subjective mental patterns. Objective truth and knowledge, therefore, are impossible.

In all of this new secular confluence, knowledge as traditionally understood loses all meaning. It is claimed to arise out of a dialectical process (à la Marx), to a process of intellectualist rationalisation (à la Weber); from conflict and competition (à la Darwin), from an open-ended discursive universe (à la Hegel), to language games (à la Wittgenstein), and, not surprisingly, to the inability to know anything with certainty (à la Nietzsche and Popper). These are all open-ended ideas of knowledge that are infinitely endless with no beginning or terminus (Choudhury 2004).

Despite these devastating implications for modernist epistemology, most of their inferences are not novel in any significant way. They are reminiscent of the nominalist arguments raised previously, even by some of the rationalist-inclined Church Fathers³⁰ of the 14th century (see Copleston 1953; Brown 2012; Mahomedy 2015a). There is, however, a critical difference in the psycho-social and scientific *implications* between the earlier and the latter rationalist-based outcomes. In medieval society, people could at least still rely on scriptural Revelation for meaning and purpose in life. The Divine texts always served as an indubitable source of guidance for humankind on these important issues, and recourse to them was always assured.

With the Enlightenment, on the other hand, humanity vested all of its faith in rationality as the ultimate arbiter of truth. But now, even that could no longer be trusted to yield any objective truth. As El-Mesawi (2007) highlights, when modernist epistemology deprived man of heart, post-modernity has now come in its wake and stripped him of his mind as well. He thus warns that the “subject-matter of scientific knowledge itself was now at stake” and it, therefore, effectively heralds the end of science, reason, and even language (El-Mesawi 2007:217). Comte’s absolute faith in his Religion of Humanity blinded him to the eventuality that his Temple of Science itself would soon crumble under its own weight, bringing crashing down before its altar all of its idols erected as “object[s] of Positivist worship” (Comte 1908:368). And beneath its heap of

³⁰Such as William of Ockam, John of Mirecourt, and Nicholas of Autrecourt, who were Franciscans from the School of Paris (see Moody 1947; Copleston 1973).

ruins now lies buried the hubris of man's claim that "there are no mysterious incalculable forces that come into play, but rather that one can, in principle, master all things by calculation" (Weber 1946:155).

But where does all of this now leave man's inhering quest for truth, nonetheless? In this now post-modern period, with religious texts all but banished from the knowledge enterprise; with the authority of scientific rationality on very shaky grounds (see Bartley 1987); and with the consequent collapse of all grand narratives (Lyotard 1984); where was humanity now to turn to for answers to all of the fundamental questions of life?

By rejecting a transcendental reality and absolutising rationality, modernity destroyed both itself and its "religion", modernist science. Worse still, it has now trapped humanity within a maze from within which there appears to be no escape. As Sheehan (2007:3) poignantly remarks

We live amidst a vertigo of conflicting claims. Criteria for distinguishing truth from falsity, rationality from irrationality, fact from fantasy, possibility from absurdity, become ever difficult to formulate in a way that inspires conviction and consent.

5.3 Implications for Modern Man

In many of the post-modern trends that are emerging from the agenda of rationalist philosophy, humankind now, therefore, is left in a state of bewilderment and flux. The obliteration of any anchor point or frame of reference deprives individuals of certain absolutes within which to ground themselves and their experiences (El-Mesawi 2007). Paradoxically, it implies a form of absolute relativism in which meanings of things and events are in a continuous state of permanent change and fluidity. In this now "disenchanted world", to quote Weber (1946:140) again, since everything is "provisional and not definitive . . . death is meaningless [and] life as such is meaningless" too. But humanity still yearns for meaning and purpose in existence, which knowledge ought to have provided us with, yet, we are now led to believe that existence itself is indifferent to that quest. Individuals are now consciously alone but physically surrounded by a purposeless and desacralized cosmos denuded of any intrinsic relevance.

What then, is the future for humanity and its environment under these circumstances? The psycho-social and political consequences of this disaffection, which people now experience between themselves and the world, has been phenomenal. Despite the quantum leaps in technological discoveries attained, humankind has not only become estranged from its external environment but individuals likewise suffer a sense of deep alienation from even within themselves.³¹ On the socio-scientific plane, the application of nuclear energy and biogenetic engineering to weaponisation and medico-industrial programmes, respectively, all but threatens the very existence of humanity itself (see Sardar 1988). The

³¹Tarnas (1993) suggests that at the personal level, one can easily discern the various attempts to escape from this meaninglessness in the form of consumerism, faddism, alcoholism, automatism, anarchism, and nihilism.

genetic altering of human nature appears to be a not-too-distant reality, ushering in the possibility of even a post-human stage of history (Fukuyama 2002). That post-modern society is characterised by a continual conflict and competition between values, interests, cultures and ideologies, as a result, is hardly contestable and certainly warrants a detailed but separate study altogether.³²

For now, let us, therefore, return to the focus of this paper: how has this vision of a cold and soulless world, devoid of purpose and inner meaning and regulated only by chance and the will to survive, conditioned humanity's epistemological aspirations, which despite all of this emptiness, still remain? Clearly, in the absence of some supra-rational authority, the inner tensions characterising the dualisms of conflicting ideas, doctrines, theories, and methodologies will not dissipate. And since the need for resolution lingers on, it spurs humanity onto a pathway of perpetual discovery with no terminus or end-point. As al-Attas (1985:120) contends "the quest is insatiable and the journey perpetual because doubt ever prevails, so that what is sought is never really found, what is discovered never really satisfied its true purpose". Concepts of "change", "progress", "development", etcetera, are all manifestations of this inanity and discontent that eludes any satisfying fulfilment.

Many of these outcomes of occidental epistemology have not gone unnoticed among several Western scholars. Polanyi (1958), Bateson (1973), Kuhn (1962), Ravetz (1972), Schumacher (1973), Whitehead (1984), Capra (1982, 1988), Toulmin (1990, 1998), Trigg (1993), Tarnas (1993) and Shelldrake (2012, 2013) have all been acutely aware of them, and have consequently called for a fundamental re-evaluation of their underlying motivations. Schumacher (1973:71) was even more candid when he lamented that "the leading ideas of the nineteenth century which claimed to do away with metaphysics, are themselves a bad, vicious, life-destroying type of metaphysics. We are suffering from them as from a fatal disease". Capturing this self-same sentiment, Heilbroner (1991:11), asks

There is a question in the air, more sensed than seen, like the invisible approach of a distant storm, a question that I would hesitate to ask aloud did I not believe it existed unvoiced in the minds of many: "Is there hope for man?"

Given these expressions of despondency, does humanity have any other option but to question very searchingly how in such a short space of time, the very thinking faculties which elevated humans to a status "immeasurably superior to that of . . . animals (Sarton 1924:13, see also Gaylin 1984) have now plunged them to the extreme depths of hopelessness and despair?

³²For Fukuyama (1992), it signifies a convergence of Eurocentric hegemony in the form of democratic capitalism (Choudhury 2009) whilst for Huntington (1996), it would usher in an apocalyptic "Clash of Civilisations".

6 Implications for Islamic Economics (IE)

The above account of the impact of rationalist epistemology on human thought since the advent of modernity, and of its early penetration into the world of Christendom prior to that (see Mahomedy 2015a), was not conducted exclusively for its own sake. It was undertaken, rather, in the context of the impasse in IE, and the recent call by several Islamic economists (e.g. Haneef 2012) for a thorough reappraisal of why the Western tradition of science (and economics) might not have been suitable for the development of IE. Several critical implications emerge when the overall objectives of Islamic economics are juxtaposed against the findings of this analytical review. It helps to clarify the dissonance between the two and why IE is in an existential crisis at present. I discuss three of them hereunder, and will then revisit the rest in a follow-up paper.

6.1 The Ideological Clash

Firstly, the Islamic economists, as guided by the principles of the Islamisation of Knowledge (IoK) project, aimed to combine the secular and religious branches of knowledge together. They presumed that this could be achieved simply by adapting and modifying mainstream economic science and interspersing within it a palliative of Islamic concepts and values (Choudhury 2010). Most scholars, especially among the so-called “second-generation Islamic economists” (see Islahi 2013), those that gave shape and content to the growing discipline, believed that no major shift was required. Modern economics, it was maintained, could easily accommodate IE as a special case. They were resolute in their conviction that there was no need to construct the discipline *de novo* (see Siddiqi 1981, 1994; Naqvi 1981; Mannan 1984; Anwar 1990; Hassan 1998; al-Jarhi 2004, Limam 2004).

With these notions in mind, the Islamic economists aspired to erect a “new” discipline but firmly embedded within the methodological foundations of modern science. They embraced rationalist thought on the assumption that it is epistemologically neutral and therefore quite amenable to their agenda. They courted its principles (together with some of the core axioms of neoclassical economics), and then cloaked its framework with the idealised norms of Islamic economic behaviour, expecting an “Islamised” economics and its off-shoot, “Islamic” finance, to emerge therefrom. The desired outcome, by their own admission, has hardly been achieved (Zaman 2011; Haneef & Furqani 2011; Salleh 2011; Khan 2013). Why then, has this approach failed so dismally?

As this study has demonstrated repeatedly, rationalist philosophy, from its ancient Hellenic origins (see Mahomedy 2015a) until the present, has always stood, if not in opposition, then certainly as a distinct alternative, to several doctrines of Revealed religion. This effrontery of rationalist thought to religion is particularly pronounced with regard to the role of humanly-derived knowledge in understanding reality, and on how to employ it in addressing the problems of human life and society. As tensions intensified following the perceived incompatibility between religion and reason, this presumptuousness of rationalist

philosophy in the occidental world magnified so that it sought to diminish, and even belittle, the role of religion, as was exemplified during the Enlightenment. The ultimate vision then, post-Enlightenment, was to increasingly secularise society and all of its institutions of learning and culture, so as to blunt, as far as possible, the penetrative force of religious dogma from human consciousness. Positivist science was the engine so construed, to operationalise this objective and bring it to fruition.

Given this clear intent of rationalism, it was imprudent for the Islamic economists to align their programme to this secularising force, for it symbolises the exact antithesis of what the Islamic economists ultimately wished to achieve. Rationalism, at its core (see Mahomedy 2015a:9-11), is inimical to the IE ideal since Islam epitomises the absolute supremacy of God and man’s unconditional surrender to His Will, whilst the other aims to diminish God’s role and advocates for the absolute freedom of humankind from submission to anyone at all. The ground that the Islamic economists had to cede vis-à-vis the high objectives of Islam, in order to endear their “Islamisation” programme to the demands of rationalist science, might well have distorted the true spirit of Islam as encapsulated in the Qur’an.³³ Their persistence with this approach is worrisome, since they were warned almost three decades ago of the inherent dangers of these “exercises in apologetics” (Nasr 1986:211), that it might enervate the “Islamization project of its creative potential” (Nasr 1991:3-4), or worse still, that it could lead to the “Westernisation of Islam” itself (Sardar 1984:40).

6.2 The Epistemic Dissonance

Notwithstanding the deep ideological undertones of this issue, implanting IE within the womb of either intellectualism or empiricism³⁴ (or both, as some Islamic economists have suggested (see Kahf 1978, 2012)) was, from a purely epistemic standpoint, bound to lead to an early miscarriage of the discipline. This is because as these epistemai evolved from the start of the Scientific Revolution up to Kant and beyond, they recognised only and exclusively the human origins of knowledge independent of all external influences. They therefore explicitly abjured any role for Revelation in the acquisition of knowledge. Moreover, other forms of intuitive learning, metaphysical notions, and even physical but non-quantitative descriptors were to be precluded altogether from epistemological considerations (see Kepler³⁵ as cited in Burt 1932, Guénon 1953; El-Mesawi 2007, Zaman 2009, 2013, 2015).

Consequently, as these rationalist-based epistemic frameworks were being constructed, viz. when their sources of knowledge were debated and considered,

³³The Qur’an is believed by all Muslims unanimously to be the final revelation of God sent by Him via His final prophet Muhammad (Peace be upon him), for the guidance of all of humanity.

³⁴These emerged as the two dominant epistemai of modern rationalism.

³⁵His exact words were “just as the eye was made to see colors, and the ear to hear sounds, so the human mind was made to understand, not whatever you please, but quantity.” (Kepleri 1858 as cited in Burt 1932:68).

when the basic categories of human thought were codified, and when their pre-suppositions were formulated and methodological procedures crafted, whatever did not satisfy the qualifying criteria were discarded and banished from the repertoire of admissible concepts and methodologies (see Holtzman 2003). So that there be no ambiguity as to what was considered legitimate for science or not, Alfred Ayer in his *Language, Truth, and Logic* (1936:14) derided any “‘reality’ transcending the limits of all possible sense experience” as simply “the production of nonsense”.

Given this conception of rationalist science, it was, therefore, inevitable that forcing any kind of symbiotic accommodation for IE within rationalist science was doomed to fail from inception. There is just simply no theoretical space within the latter’s analytical framework for the broad range of epistemic and ontological concepts that Islamic economics needs to explicitly incorporate within its field of enquiry. These include, of necessity, the metaphysical notions of God and the Hereafter, the primal role of Revelation and Prophetic guidance, the inclusion of morals and values, the cognisance of qualitative features and variables, the discursive process of inclusive participation, etcetera. Where and how, might the logical positivist ask the Islamic economist, did s/he expect to incorporate these “meaningless” (i.e. Ayer’s “nonsense”) notions anywhere within the modernist paradigm of science, without fundamentally altering it? That the two were so strikingly divergent to each other, at almost every level, completely escaped the attention of the Islamic economists who insisted on a forced marriage between them, however incompatible they are and unequal the power-relations between them.

6.3 Opposing Dualisms vs. Internal Harmonies

The Islamic economists’ principle justification for their discipline was the need for a body of knowledge that transcends the religious-secular dichotomy. Muslim scholarship from across all domains would certainly applaud this objective for such a bifurcation has not existed in the earliest traditions of knowledge in Islam. This is hardly contentious since Islam does not endorse the classical mind-matter dualism, and hence does not recognise the inherency of any tension or conflict emanating therefrom. Its implications are therefore enormous and rightfully needed to be a foremost item on any Islamisation agenda.³⁶ So far so good.

But then the Islamic economists looked towards the rationalist methodology of modern science to bridge this divide. As this study has elaborated in detail, an essential feature of rationalist epistemology is its proclivity for dichotomisation. It has not touched any area of learning, including religious discourse, except that it imprints upon it an abiding sense of dualism. This became evident from the earliest exchanges between rationalist thought and Christian theology, as manifested by the double-truth theory, for example (see Mahomedy 2015a). More significantly, these dualities are cast into moulds of opposing tendencies so that they are increasingly viewed as irreconcilable opposites. Each, feeling

³⁶Given the depth and breadth of this issue alone, it warrants a separate study.

threatened by its “polar opposite”, then fiercely battles it to gain domination and ascendancy.

As indicated in Section 4, these apparently conflictual states of reality are then projected across all domains of human cognition: at the ontic, epistemic and relational levels. We get “locked” into its mode of thought, seeing all facets of existence essentially through a prism of contesting opposites. Now when the Islamic economists leaned on rationalist epistemology, not only did they fail to overcome the secular-religious divide they originally targeted, but they ended up transplanting into the Islamic economic discourse the entirety of these spurious dichotomies, with its attendant tensions and frictions. In effect, they exacerbated the problem they set out to resolve. They wholly neglected to draw from the Qur’an the oft-repeated references to the complementary nature of “paired” universes to be found in all of the created order.³⁷ They opted, rather, for the marginalist substitution principles of neoclassicism. This polarising virus of rationalist thought has now so infected the discipline that Islamic economic thought resembles very much its neoclassical counterpart in this regard and, as a result, is hardly distinguishable from it.

Apart from these critical differences between the rationalist and Islamic frameworks of knowledge, there are still the remaining issues of the atomisation of knowledge and its consequences, the failure to find an irreducible premise of knowledge, and the treatment of implicit and/or explicit values in both systems of thought. I will reserve a detailed discussion of these for the third and last paper of this series, wherein I will elaborate upon them within the context of economic science specifically.

What is, however, already emerging from the discussion so far is that the Islamic economists overlooked the need to develop an epistemological framework commensurate with the kind of enterprise they sought to build. They did not pay attention to this important first step that is indispensable for any reconstruction of knowledge. Had they articulated such an episteme for their scientific enterprise, they could have derived therefrom, and constructed thereupon, a matrix of concepts, ontological categories, and axioms apposite to that episteme. From that base, they could have then launched their project and developed its content accordingly. The intellectual quagmire that they now find themselves in is largely due to this glaring lacuna in their enterprise. More seriously, their embrace of rationalist philosophy and its epistemological varieties has now turned into a fatal one, threatening to suffocate whatever remains of its promising spirit. Some of these issues will be revisited in the paper to follow this one.

7 Conclusion: How Far Have We Come

Humankind’s distinction among all of creation is its unique ability to learn and remember, to recall and reflect, and to engage continuously and recursively in fellowship in all of these cognitive processes. It is by dint of humanity’s

³⁷See, for example, al-Qur’an (Ch. 36, V.36).

capacity for this creative knowledge that humanity is considered the crown of God's creation³⁸ and "for this reason [too,] that God has given man the empire over nature" (Leibniz 1699 as cited in Hall 2002).

It is no surprise, then, that learned scholars throughout history have dedicated so much of their energies and efforts in seeking to understand this process so that people may rise from conjectural states towards the attainment of higher levels of certainty and conviction. Among those societies that adhered to the dictates of Revealed religion, the Divine scriptures, appropriately supported by the rational faculties of man, guided people towards recognising and apprehending the truth. This complementary relationship between Revelation and rationality served its purpose well. Both were indispensable, for indeed to live even by the demands of the Revealed scriptures alone requires comprehension, understanding, and the intellectual skills to faithfully translate this message into practice.

But when Christian theology opened its doors to the Hellenist philosophical tradition of rationalism, the nature of this relation turned to one of rivalry and competition for domination, eventually culminating in a fierce struggle between the two (see Mahomedy 2015a). It fomented within Christendom an intellectual turbulence that coalesced with the other socio-political challenges to Church authority, leading to the destructive wars of the 16th century, spawned by the conflict between *organised* religion and its opponents. In its aftermath, the perception started to take hold that religion itself was to blame for all of the upheaval and bloodshed. From its ashes, rationalist thought emerged as the victor, finding its expressive spirit in the Scientific Revolution and the Enlightenment.

In the new dispensation, religion was forced to the margins of society, confined to serve merely as a source of spiritual comfort, and strictly within the private domain only. Rationality was elevated to become the final arbiter of all truth claims about the world. The *coup de grace* was struck when religious doctrine itself came under the scalpel of human critical reason. The Christian faith and its institutional embodiment, the Church, was by the turn of the 18th century sufficiently weakened both from within and without to be able to offer any kind of resistance to the onslaught of this movement. It undoubtedly marked the beginnings of a new, but unpredictable, future for European civilisation.

This new vision of modernity promised to humankind a bright, new world free from the strictures of myth, institutionalised religion, and dogmatic beliefs. But in so doing, it transmitted the split in the unicity of the human intellect, previously confined to scholastic intellectual gymnastics (see Mahomedy 2015a), into the very heart of the socio-scientific enterprise. By spurning the religious narrative of life and existence, all of knowledge now needed to be reconstituted afresh. New categories of thought, with radically different presuppositions, had to be formulated *de novo*. The epistemic and ontological content for modern sci-

³⁸It was on the demonstration of this feat of Man that God had commanded His Angels to prostrate before Adam, peace be upon him (see Al-Quran Ch. 2: V.34).

ence was provided for by its two dominant epistemai, intellectualism and empiricism, each shaped by its own set of fundamental assumptions about knowledge and nature. But it came at an enormous cost: an enduring dualism segregated along lines of contrasting opposites and competing alternatives. Not only did it polarise scientific thought and practice along several trajectories, but it also grafted these spurious dichotomies onto all of the socio-political and economic institutions of modern civilisation, leaving its mark firmly imprinted on all of its artefacts.

The failure to unite the various competing claims, by Kant and others, destroyed hopes for any kind of integrative synthesis and convergence in human thought. With the self-arrogation of man to the high pedestals of autonomy and self-sufficiency, God and religion were gradually effaced from man's active consciousness, so that he rose to become a god unto himself (à la Nietzsche). In Comte's Positivist philosophy and science, humanity was solemnised as the sole object of worship. Not surprisingly, these strands merged to give birth to a radical new humanism: a liberalist philosophy in which all of reality is relative to the individual. Its corollary was that morality itself, and the ethical values that flow therefrom, were now also individualised.

But the implications of all of these developments for epistemology were even more profound: ultimately, objective reality could not be rationally demonstrated. In its blowback, all of the claims of rationalism were consequently neutralised. Nihilism was its logical outcome. And like the *Ouroboros* serpent of Greek mythology, rationalism devoured itself from its tail end. It effectively brought an end to the long and heroic but tragic journey of the occidental world in its search for the roots of knowledge outside the framework of religious discourse. And as the stark reality of this failure begins to unfold, it now leaves humanity with an even greater predicament than had presented itself at the start of the journey: humanity now has little else with which to proceed forward. For not only does it lack any criterion to guide it in its quest for ultimate truth, it also has no base within which to anchor even simple thought processes. Radical scepticism now re-emerges in the post-modern psyche.

For the end purposes of this paper, how all of these significant changes escaped the attention of the Islamic economists is disconcerting. With the high objectives of unifying knowledge into a comprehensive whole that they set out to achieve, they turned to an epistemology that was already in its death throes. How could it support their project when it was already failing on its own terms (see Bartley 1987)? But more fundamentally, rationalist epistemology was erected to counter the very thesis of religious-secular unification that the Islamic economists sought, and in its more recent formulations, it was openly antagonistic towards any kind of religious intrusion into its surrogate, modernist science. Its protagonists considered any invocation of God or His Divine Law as scientific blasphemy (Choudhury 2014).

Not surprisingly, therefore, the attempt to superimpose upon its structure a conception of economics predicated upon the (limited) application of some Islamic concepts and values was bound to fail. The categorical conflict in episteme between the two systems rendered them incompatible for the kind of integration

desired. But by pursuing such a syncretic approach, however superficial (and well-intentioned), it had the unintended consequence of transplanting the whole gamut of opposing dichotomies from secular rationalism into the nascent discipline of Islamic economics. This burdened the fledgling science, struggling yet with other methodological issues, to now also resolve antinomies that had no bearing, in the first place, within the Islamic system of values. As these problems compounded and became insurmountable, the Islamic economists began to recognise that something indeed had gone awry with their project. Most encouragingly, they have now engaged in a process of deep introspection to unravel how and why things have gone wrong. This study aims to contribute towards that critical reappraisal.

8 A Brief Introduction to the Last Segment (Part III) of the Study (To appear in a subsequent issue of this series)

In this, and the previous paper in this series, the incursion and evolution of rationalist epistemology and its impact on science and human thought, in general, are discussed. Rationalist epistemology is the foundation upon which subsequent development occurred in all of the sciences, including both the natural and social disciplines. To varying degrees and in different ways, the sciences have responded to this pervasive influence of the rationalist claims to knowledge.

Of all the disciplines, it is perhaps economics that endured the most fundamental alteration in its character after embracing the central tenets of rationalism. It incorporated ideas from both the intellectualist and empiricist schools of thought with regard to both its ontological assumptions and epistemic orientations. Yet it did so using an eclectic approach that lacked any sort of creative integration (see Coleman 1995). Remarkably, though not surprisingly, the very same set of debates and controversies that raged between and within the broad fields of knowledge generally were now replicated within economics specifically. Economics, as expected, became a highly-contested domain, initiating several “canonical *methodenstreite*”³⁹ that rocked the foundations of the discipline at each stage. When the ensuing tensions could not be resolved, economics fractured into several disciplines, effectively giving birth to the different social sciences. Each of these then took a life form of its own, developing along its own trajectory and cut off from causal relations with other disciplines, which in the real world still inheres nonetheless.

But economics per se, after its painful separation from its sibling disciplines, now pursued even more aggressively its aspiration to become a fully-fledged *science* in the form of the natural sciences. It increasingly adopted the methods of positivist science. Before long, this brought about another “watershed in the evolution of economic theory” (Milonakis & Fine 2009: 297), inaugurating what has been described as the “formalist revolution” of the 1950s (see Blaug

³⁹I.e. the “Great Disputes over Method”.

2003). Mathematisation and quantification became defining features of the discipline, with the principles of rationalism now undergirding both its ontology and methodology. Coterminous to this reorientation, whilst microeconomics continued to uphold the theoretic-deductive tradition, the newly emerging sub-field of macroeconomics, post the Keynesian Revolution, aligned itself with the empirical-inductive method. Unsurprisingly, and once again in the true spirit of rationalist atomism, the gulf between these two sub-branches widened, so that each has now assumed a distinct character of its own, explaining a reality partitioned from the other. The much-acclaimed “grand neoclassical synthesis” between them (see Samuelson 1955: VI) proved to be an embarrassing failure, and with dire consequences for the real economy (see Lucas and Sargent 1978; Hodgson 2009).

All of these far-reaching changes in the discipline have induced great consternation from several Nobel Laureates in economics and many other leading economists, some of whom, paradoxically, might have even, directly or otherwise, contributed towards the kind of economics that they subsequently disavowed. With the onset of the severe economic crises gripping the real world economies, the integrity and future of the discipline are now clearly at stake. But this should hardly come as a surprise. For over four decades, if not longer, many economists even from within the mainstream were warning of this eventuality.

These are the key aspects of the discipline that will be fully examined in the next paper, reflecting thereafter on its significance for Islamic economics. And it thus still begs the question: Why did the Islamic economists not recognise that their dissatisfaction with mainstream economics could not be limited to merely the institution of interest/usury or the exclusion of ethics from the discipline, notwithstanding their importance? Why could they not see that the problem was far more deep-rooted, and that it stemmed from epistemic and ontological presuppositions that militated against the very core of the unitary paradigm of Islamic knowledge; and as a consequence thereof that a simple, mechanical admixture of diametrical opposites was bound to produce a distorted clone of the original?

References

- [1] Al-Attas, SMN 1985. *Islam, Secularism and the Philosophy of the Future*. London: Mansell.
- [2] Al-Qur'an (n.d). *The Koran*.
- [3] Al-Jarhi, MA 2004. A Short Discourse on Markets in an Islamic Economic System. Paper presented at the Islamic Development Bank Roundtable on Islamic Economics: Current State of Knowledge and Development of the Discipline, Jeddah: May 26-27.
- [4] Anwar, M 1990. Islamic Economic Methodology. *Journal of Objectives Studies* 2,1: 28-46.

- [5] Arnold, T & Guillaume, A 1931. *The Legacy of Islam*. Oxford: Clarendon Press.
- [6] Ashman, KM & Baringer, PS (eds) 2001. *After the Science Wars: Science and the Study of Science*. London: Routledge.
- [7] Ayer, AJ 1936. *Language, Truth and Logic*. London: Gollancz.
- [8] Ayer, AJ 1956. *The Problem of Knowledge*. London: Macmillan.
- [9] Bacon, F 1620. The New Organon or True Directions Concerning the Interpretation of Nature. In Spedding, J, Ellis, RL & Heath, DD (trans 1863): *The Works*. Vol. VIII. Boston: Taggard & Thompson. Available at www.constitution.org/bacon/nov_org.htm.
- [10] Bakar, O 1991. *Tawhid and Science: Essays on the History and Philosophy of Islamic Science*. Kuala Lumpur: Secretariat for Islamic Philosophy and Science.
- [11] Barrow, JD 1991. *Theories of Everything: The Quest for Ultimate Explanation*. Oxford: Oxford University Press.
- [12] Bartley, WW III 1982. Philosophy of Biology versus Philosophy of Physics. *Fundamenta Scientiae* 3,1: 55-78.
- [13] Bartley, WW III 1984. *The Retreat to Commitment*. London: Open Court.
- [14] Bartley, WW III 1987. Theories of Rationality. In Radnitzky, G & Bartley, WW III (eds): *Evolutionary Epistemology, Theory of Rationality, and the Sociology of Knowledge*. La Salle (Illinois): Open Court.
- [15] Bateson G 1973. *Steps to an Ecology of Mind*. St Albans: Paladin.
- [16] Becker, SO, Pfaff, S & Rubin, J 2016. Causes and Consequences of the Protestant Reformation. *CAGE Working Paper No: 260*.
- [17] Berlin, I (ed by Hardy, H) 1980. *Against the Current: Essays in the History of Ideas*. New York: The Viking Press.
- [18] Berlin, I (ed by Hardy, H) 2000a. *Three Critics of the Enlightenment: Vico, Hamann, Herder*. Princeton, NJ: Princeton University Press.
- [19] Berlin, I (ed by Hardy, H) 2000b. *The Power of Ideas*. Princeton, NJ: Princeton University Press.
- [20] Berlin, I (ed by Hardy, H) 2001. *The Roots of Romanticism*. Princeton, NJ: Princeton University Press.
- [21] Beum, R 1975. Educational Secularism: The Origins. *Modern Age* 19,1: 48-60.

- [22] Blaug, M 2003. The Formalist Revolution of the 1950s. In Samuels, WJ, Biddle, JE & Davis, JB (eds): *A Companion to the History of Economic Thought* (Malden, MA and Oxford, UK: Blackwell).
- [23] Briffault R 1938. *The Making of Humanity*. London: George Allen & Unwin.
- [24] Brodbeck M 1958. Methodological Individualisms: Definition and Reduction. *Philosophy of Science* 25,1: 1-22.
- [25] Brown, D 2012. Hume and the Nominalist Tradition. *Canadian Journal of Philosophy* 42,1: 27-44.
- [26] Buchanan, JM 1960. *Fiscal Theory and Political Economy*. Chapel Hill: University of North Carolina Press.
- [27] Burt, EA 1932. *The Metaphysical Foundations of Modern Science*. New York: Doubleday Anchor Books.
- [28] Campbell, DT 1987. Evolutionary Epistemology. In Radnitzky, G & Bartley, WW III (eds): *Evolutionary Epistemology, Rationality, and the Sociology of Knowledge*. Illinois: Open Court Publishing.
- [29] Capra, F 1982. *The Turning Point: Science, Society and the Rising Culture*. New York: Simon & Schuster.
- [30] Capra, F 1988. *Uncommon Wisdom: Conversations with Remarkable People*. New York: Simon & Schuster.
- [31] Carboni, S 2007. *Venice and the Islamic World: 828-1797*. Paris: Institut du Monde Arabe.
- [32] Carnap, R 1966. Kant's synthetic a priori. In Gardner, M (ed): *Philosophical Foundations of Physics*. New York: Basic Books.
- [33] Cashdollar, CD 2000. Positivism. In Ferngren, GB, Larson, EJ & Amundsen, DW (eds): *The History of Science and Religion in the Western Tradition: An Encyclopedia*. New York: Garland.
- [34] Castillo, M 2010. Dualism: From Descartes and Bacon to AJNR. *American Journal of Neuroradiology* 31,2: pp. 199-200.
- [35] Changeux J-P 2004. *The Physiology of Truth: Neuroscience and Human Knowledge* De Bevoise, MB (trans). Boston: Harvard University Press.
- [36] Choudhury, MA 2000. *The Islamic Worldview*. London: Kegan Paul International.
- [37] Choudhury, MA 2004. *The Islamic World-system: A Study in Polity-Market Interaction*. London: Routledge.

- [38] Choudhury, MA 2006 Development of Islamic Economic and Social Thought. In Hassan, MK & Lewis, M (eds): *Handbook of Islamic Banking*. London, UK: Edward Elgar Publishing Company.
- [39] Choudhury, MA 2008. Islamic Economics and Finance – A Fiasco. *Middle East Business and Economic Review* 20,1: 38-51.
- [40] Choudhury, MA 2009. Dialectics in Socio-scientific Inquiry: Islam Contra Occident. *International Journal of Sociology and Social Policy* 29, 9/10: 498-511.
- [41] Choudhury, MA 2010. The Dynamics of the Shari'ah and the World-System. *Journal of King Abdul Aziz University: Islamic Economics* 23,2: 197-225.
- [42] Choudhury, MA 2011. *Islamic Economics and Finance: An Epistemological Inquiry*. Bingley, UK: Emerald.
- [43] Choudhury, MA 2014. *Tawhidi Epistemology and its Applications: Economics, Finance, Science and Society*. Newcastle upon Tyne, UK: Cambridge Scholars Publishing.
- [44] Coleman, WO 1995. *Rationalism and Anti-rationalism in the Origins of Economics: The Philosophical Roots of 18th Century Economic Thought*. Aldershot, UK: Edward Elgar.
- [45] Collinson, P 2003. *The Reformation*. London: Weidenfeld & Nicolson.
- [46] Comte, A 1853. *The Positive Philosophy of Auguste Comte*. Martineau, H (trans). London: John Chapman.
- [47] Comte, A 1908. *A General View of Positivism*. Bridges, JH (trans). London: George Routledge & Sons.
- [48] Copleston, FC 1953. *A History of Philosophy*. Vol. III. London: Burns, Oates & Washbourne.
- [49] Copleston, FC 1957. *A History of Philosophy*. Vol. II Mediaeval Philosophy, Augustine to Scotus. Westminster, Maryland: Newman Press.
- [50] Copleston, FC 1973-74. The Logical Empiricism of Nicholas of Autrecourt. *Proceedings of the Aristotelian Society* 74: 249-262.
- [51] Cottingham, J 1993. Descartes: Metaphysics and the Philosophy of Mind. In Parkinson, GHR (ed.): *Routledge History of Philosophy*. Vol. IV, The Renaissance and Seventeenth-Century Rationalism. London: Routledge.
- [52] Courtenay, WJ 1989. Inquiry and Inquisition: Academic Freedom in Medieval Universities. *Church History* 58,2: 168-181.

- [53] Curley, EM 1986. Analysis in the Meditations: The Quest for Clear and Distinct Ideas. In Rorty, A (ed): *Essays on Descartes' Meditations*. Berkeley: University of California Press.
- [54] Dampier, WS 1961. *A History of Science and Its Relations with Philosophy and Religion*. Cambridge: Cambridge University Press
- [55] Descartes, R 1985. *The Philosophical Writings of Descartes*. 3 Vols. Cottingham, J, Stoothoff, R & Murdoch, D (trans). Cambridge: Cambridge University Press.
- [56] Descartes, R 1927. *Discourse on Method, Meditations, and Principles of Philosophy*. Dent: Everyman's Library.
- [57] Dewey, J 1903. *Studies in Logical Theory*. Chicago: University of Chicago Press.
- [58] Dewey, J 1938. *Logic: The Theory of Inquiry*. New York: Holt.
- [59] D'Holbach, PHT 2001. *The System of Nature*, 2 Vols. Robinson, HD (trans). Kitchener: Batoche Books.
- [60] Dilworth, C 2007. *The Metaphysics of Science: An Account of Modern Science in Terms of Principles, Laws and Theories*. Boston Studies in the Philosophy of Science Vol. 173. Dordrecht, Netherlands: Springer.
- [61] Dobbs, BJT & Jacob, MC 1995. *Newton and the Culture of Newtonianism*. Atlantic Highlands, NJ: Humanities Press.
- [62] Draper, JW 1875a. *History of the Conflict between Religion and Science*. New York: D. Appleton & Company.
- [63] Draper, JW 1875b. *A History of the Intellectual Development of Europe*. 2 Vols. London: George Bell & Sons
- [64] Durant, W 1980. *The Story of Civilization*. Vol IV, The Age of Faith. New York: Simon & Schuster.
- [65] El-Mesawi, ME 2007. Religion, Society and Culture in Malik Bennabi's Thought. In Abu-Rabi', IM (ed): *The Blackwell Companion to Contemporary Islamic Thought*. Oxford: Blackwell.
- [66] Emilsson, EK 1999. Neo-Platonism. In Furley, D (ed): *Routledge History of Philosophy*. Vol. II, From Aristotle to Augustine. London and New York: Routledge.
- [67] Feyerabend, P 1975. *Against Method*. London: Verso
- [68] Ferngren, GB, Larson, EJ & Amundsen, DW 2000. *The History of Science and Religion in the Western Tradition: An Encyclopedia*. New York: Garland Publishing.

- [69] Fiala, A 2013. *Against Religion, Wars, and States: The Case for Enlightenment Atheism, Just War Pacifism, and Liberal-democratic Anarchism*. Plymouth: Rowman & Littlefield Publishers.
- [70] Finocchiaro, M (ed) 1989. *The Galileo Affair*. Berkeley: University of California Press.
- [71] Fukuyama, F 1992. *The End of History and the Last Man*. New York: The Free Press.
- [72] Fukuyama, F 2002. *Our Posthuman Future: Consequences of the Biotechnology Revolution*. New York: Farrar, Straus and Giroux.
- [73] Furley, D 1999. Aristotle the Philosopher of Nature. In Furley, D (ed): *Routledge History of Philosophy*. Vol. II, From Aristotle to Augustine. London and New York: Routledge.
- [74] Garaudy, R 1985. The Balance Sheet of Western Philosophy in this Century. *The American Journal of Islamic Social Sciences* 2,2: 169-178.
- [75] Garber, D 1978. Science and Certainty in Descartes. In Hooker, M (ed): *Descartes: Critical and Interpretive Essays*. Baltimore: Johns Hopkins University Press.
- [76] Gaylin, W 1984. In Defense of the Dignity of Being Human. *The Hastings Center Report* 4,4: 22 -119.
- [77] Gellner, E 1995. Prometheus Perplexed. In Jarvie, IC & Laor, N (eds): *Critical Rationalism, the Social Sciences and the Humanities*. Essays for J. Agassi Vol. II Boston Studies in the Philosophy of Science, Vol. 162. Dordrecht: Kluwer Academic Publishers.
- [78] Germino, D 1970. "Modernity" in Western Political Thought. *New Literary History* 1,2: 293-310.
- [79] Gillespie, MA 2008. *The Theological Origins of Modernity*. Chicago: University of Chicago Press.
- [80] Gilson, E 1938. *Reason and Revelation in the Middle Ages*. New York: Charles Scribner's Sons.
- [81] Gordon, S 1991. *The History and Philosophy of Social Science*. London: Routledge.
- [82] Grant, E 1962. Late Medieval Thought, Copernicus, and the Scientific Revolution. *Journal of the History of Ideas* 23,2: 197-220.
- [83] Grant, E 1997. *The Foundations of Modern Science in the Middle Ages: Their Religious, Institutional, and Intellectual Context*. Cambridge: Cambridge University Press.

- [84] Grant, E 2001. *God and Reason in the Middle Ages*. Cambridge: Cambridge University Press.
- [85] Grant, E 2006. *Science and Religion, 400 B.C. to A.D. 1550: From Aristotle to Copernicus*. Baltimore: Johns Hopkins University Press.
- [86] Gregory, F 2008. *Natural Science in Western History*. Boston and New York: Houghton Mifflin Company.
- [87] Gross, PR & Levitt, N 1994. *Higher Superstition: The Academic Left and Its Quarrels with Science*. Baltimore: Johns Hopkins University Press.
- [88] Guénon, R 1953. *The Reign of Quantity and the Signs of the Times*. London: Luzac & Co.
- [89] Hall, AR 2002. *Philosophers at War: The Quarrel Between Newton and Leibniz*. Cambridge: Cambridge University Press.
- [90] Haneef, MA & Furqani, H 2011. Methodology of Islamic Economics: Overview of Present State and Future Direction. *International Journal of Economics, Management & Accounting* 19,1: 1-26.
- [91] Haneef, MA 2012. Preliminary Thoughts on Diagnosing Some Methodological Issues in Developing Islamic Economics. In *Workshop on the Future of Islamic Economics*, Jeddah: Islamic Economics Institute, King Abdulaziz University.
- [92] Hart, J 2010. Terence Hutchison and Frank Knight: A Reappraisal of Their 1940-1941 Exchange. *Journal of Economic Methodology* 17,4: 359-73.
- [93] Haskins, CH 1924. *Studies in the History of Mediaeval Science*. Cambridge, M.A.: Harvard University Press.
- [94] Hasan, Z 1998. Islamization of Knowledge in Economics: Issues and Agenda. *IJUM Journal of Economics and Management* 6,2:1-40.
- [95] Hasse, DN 2004. The Attraction of Averroism in the Renaissance: Vernia, Achillini, Prassicio. *Bulletin of the Institute of Classical Studies* 47: 131-147.
- [96] Hasse, DN 2006. The Social Conditions of the Arabic-Hebrew-Latin Translation Movements in Medieval Spain and in the Renaissance. In Speer, A & Wegener, L (eds): *Wissen über Grenzen*. Berlin: Walter de Gruyter.
- [97] Häuser, K 1988. Historical School and Methodenstreit. *Journal of Institutional and Theoretical Economics* 144,3: 532-542.
- [98] Hawking, SW 2002. *The Theory of Everything: The Origin and Fate of the Universe*. Beverly Hills: New Millennium Press.

- [99] Heidegger, M 1978. *Being and Time*. Macquarrie, J & Robinson, E (trans). Oxford: Blackwell.
- [100] Heilbroner, RL 1991. *An Inquiry into the Human Prospect*. New York, NY: W.W. Norton.
- [101] Henry, J 2000. Atheism. In Ferngren, GB, Larson, EJ, Amundsen, DW & Nakhla, A-ME (eds): *The History of Science and Religion in the Western Tradition: An Encyclopedia*. New York: Garland.
- [102] Hodges, HA 1952. *The Philosophy of Wilhelm Dilthey*. Routledge & Kegan Paul Ltd: London.
- [103] Hodgson, GM 2009. The Great Crash of 2008 and the Reform of Economics. *Cambridge Journal of Economics* 33,6: 1205-1221.
- [104] Hodgson, H 1998. The Approach of Institutional Economics. *Journal of Economic Literature* 36,1: 166-192.
- [105] Holtzman, S 2003. Science and Religion: The Categorical Conflict. *International Journal for Philosophy of Religion* 54,2: 77-99.
- [106] Howard, D 1994. Einstein, Kant, and the Origins of Logical Empiricism. In Salmon, W & Wolters, G (eds): *Language, Logic, and the Structure of Scientific Theories: The Carnap-Reichenbach Centennial*. Pittsburgh: University of Pittsburgh Press, Konstanz: Universität Konstanz.
- [107] Hume, D (ed by Beauchamp, TL) 1998. *An Enquiry Concerning the Principles of Morals*. Oxford and New York: Oxford University Press.
- [108] Hume, D (ed by Selby-Bigge, LA) 1896. *A Treatise of Human Nature*. Oxford: Clarendon Press.
- [109] Hume, D (ed by Selby-Bigge, LA) 1902. *Enquiries concerning the Human Understanding and Concerning the Principles of Morals*. Oxford: Clarendon Press.
- [110] Huntington, SP 1996. *The Clash of Civilizations and the Remaking of World Order*. New York: Simon & Schuster.
- [111] Husserl, E 1931. *Ideas: General Introduction to Pure Phenomenology*. London: Allen & Unwin.
- [112] Husserl, E 1935. *Philosophy and the Crisis of European Man*. The Vienna Lecture. Available at: http://www.users.cloud9.net/~bradmcc/husserl_philcris.html
- [113] Husserl, E 1970. *The Crisis of European Sciences and Transcendental Phenomenology: An Introduction to Phenomenology*. Carr, D (trans). Evanston: Northwestern University Press.

- [114] Islahi, AA 2013. First and Second Generation Islamic Economists: Deviations and Differences in Thoughts. Paper presented at the *9th International Conference on Islamic Economics and Finance*. Istanbul, Turkey.
- [115] Israel, J 2009. *A Revolution of the Mind: Radical Enlightenment and the Intellectual Origins of Modern Democracy*. Princeton and Oxford: Princeton University Press.
- [116] Jesseph, DM 1998. Leibniz on the Foundations of the Calculus: The Question of the Reality of Infinitesimal Magnitudes. *Perspectives on Science* 6.1&2: 6-40.
- [117] Kahf, M 1978. *The Islamic Economy: Analytical Study of the Functioning of the Islamic Economic System*. Plainfield, Indiana: The Muslim Students' Association of the United States and Canada.
- [118] Kahf, M 2012. Comments on Methodology Papers. In *Workshop on The Future of Islamic Economics: A Call for Discussion*. Jeddah: Islamic Economics Institute: 215-221.
- [119] Kant, I 1784. *An Answer to the Question: "What is Enlightenment?"* Konigsberg, Prussia. Available at: https://web.cn.edu/kwheeler/documents/What_is_Enlightenment.pdf
- [120] Kant, I & Friedrich, CJ (ed) 1949. *The Philosophy of Kant: Immanuel Kant's Moral and Political Writings*. New York: Modern Library.
- [121] Kant, I 1902. *Prolegomena to Any Future Metaphysics*. Carus, P (trans). LaSalle, Illinois: Open Court.
- [122] Kant, I 1931. *Lectures on Ethics*. Infield, L (trans). New York: Century Co.
- [123] Kant, I 1929. *Critique of Pure Reason*. Smith, NK (trans). Macmillan: London.
- [124] Khan, M 2013. *What is Wrong with Islamic Economics? Analysing the Present State and Future Agenda*. Cheltenham, UK: Edward Elgar Publishing.
- [125] Kim, SO 2012. Max Weber. In Zalta, EN (ed): *The Stanford Encyclopedia of Philosophy*. Available at: <http://plato.stanford.edu/archives/fall2012/entries/weber/>
- [126] Kray, J 1993. *The Philosophy of the Italian Renaissance*. In Parkinson, GHR (ed): *Routledge History of Philosophy*. Vol. IV, The Renaissance and Seventeenth-century Rationalism. London: Routledge.
- [127] Kuhn, TS 1962. *The Structure of Scientific Revolutions*. Chicago, Illinois: University of Chicago Press.

- [128] Kuran, T 2004. *Islam and Mammon: The Economic Predicaments of Islamism*. Princeton and Oxford: Princeton University Press.
- [129] Kvasz, L 2012. What Can the Social Sciences Learn from the Process of Mathematization in the Natural Sciences. In Dieks, D, Gonzalez, WJ, Hartmann, S, Stöltzner, M & Weber, M (eds): *Probabilities, Laws, and Structures*, 379-389. Netherlands: Springer.
- [130] Lea, HC 1963. *The Inquisition of the Middle Ages: Its Organization and Operation* London: Eyre & Spottiswoode.
- [131] Leffel, J 2000. Science and Postmodern Criticism. *The Scientific Review of Alternative Medicine* 4,1: 50-55.
- [132] Leibniz, GW (ed by Alexander, HG) 1956. *The Leibniz-Clarke Correspondence*. Manchester: Manchester University Press.
- [133] Leibniz, GW 1969. *Philosophical Papers and Letters*. Loemker, LE (ed & trans). Dordrecht: Reidel.
- [134] Leibniz, GW 1981. *New Essays on Human Understanding* Bennett, J & Remnant, P (trans). Cambridge: Cambridge University Press.
- [135] Limam, I 2004. Discussions on Presentations. In Hussein, KA (ed): *Islamic Economics: Current State of Knowledge and Development of the Discipline*. Jeddah: Islamic Development Bank.
- [136] Louth, J 2011. From Newton to Newtonianism: Reductionism and the Development of the Social Sciences. *Emergence: Complexity & Organization*, 13,4: 63-83.
- [137] Lovejoy, AO 1948. *Essays in the History of Ideas*. Baltimore: Johns Hopkins University Press.
- [138] Lucas, R & Sargent, T 1978. After Keynesian Macroeconomics. In *After the Phillips Curve: Persistence of High Inflation and High Unemployment*. Boston: Federal Reserve of Boston.
- [139] Mach, E 1959. *The Analysis of Sensations*. New York: Dover.
- [140] Mahomed, AC 2013. Islamic Economics: Still in Search of an Identity. *International Journal of Social Economics* 40,6: 556-578.
- [141] Mahomed, AC 2015a. Occidental Rationalism: Its Early Impact on the Foundations of Modern Science *ERSA Working Paper 543*. Economic Research Southern Africa.
- [142] Mahomed AC 2015b. Epistemology and Science: How the Relationship Fractured. *SAEF Working Paper No. 2016/01/06*. University of KwaZulu-Natal, South Africa.

- [143] Mahomedy AC 2015c. The Disintegrating Force of Rationalism on Economics: What it means for Islamic economics? *ERSA Working Paper 611*. Economic Research Southern Africa
- [144] Mali, J 2002. *The Rehabilitation of Myth: Vico's 'New Science'*. Cambridge: Cambridge University Press.
- [145] Mali, J & Wokler, R 2003. *Isaiah Berlin's Counter-Enlightenment*. Philadelphia: American Philosophical Society.
- [146] Mannan MA 1984. Islamic Economics as a Social Science: Some Methodological Issues. *Journal of Research in Islamic Economics*. 1,1: 41-50.
- [147] Marangudakis, M 2004. Harmony and Tension in Early Human Ecology. *Human Ecology Review* 11,2: 133-152.
- [148] McCulloch, D 2003. *The Reformation. A History*. London: Penguin Books.
- [149] McGrath, AE 2006. *A Scientific Theology*. London and New York: T & T Clark.
- [150] Merchant, C 1980. *The Death of Nature: Women, Ecology and the Scientific Revolution*. New York: HarperCollins.
- [151] Mill, JS 1836. *Auguste Comte and Positivism*. London: M Trübner & Co.
- [152] Milonakis, D & Fine, B 2009. *From Political Economy to Economics. Method, the Social and the Historical in the Evolution of Economic Theory*. London: Routledge.
- [153] Moody, EA 1947. Ockham, Buridan, and Nicholas of Autrecourt: The Parisian Statutes of 1339 and 1340. *Franciscan Studies* 7,2: 113-146.
- [154] Naqvi SNH 1981. *Ethics and Economics: An Islamic synthesis*. UK: The Islamic Foundation.
- [155] Nasr, SVR 1986. Whither Islamic Economics? *Islamic Quarterly* 30,4: 211-20.
- [156] Nasr, SVR 1991. Islamisation of Knowledge: A Critical Overview. *Islamic Studies* Autumn: 387-400.
- [157] Nietzsche, F. (ed by Williams, B) 2001. *The Gay Science* Cambridge: Cambridge University Press.
- [158] Norberg-Hodge, H 1995. The Pressure to Modernise. In Goldsmith, E, Khor, M, Norberg-Hodge, H & Shiva, V (eds): *The Future of Progress: Reflections on Environment and Development*. Dartington, UK: Green Books.

- [159] Olson, R 1991. *Science Deified and Science Defied: The Historic Significance of Science in Western Culture*. Vol. 2. Berkeley: University of California Press.
- [160] Overman, ES (ed) 1988. Introduction: Social Science and Donald T. Campbell. In *Methodology and Epistemology for Social Science*. Chicago: University of Chicago Press.
- [161] Paine, T 1880. *The Age of Reason*. London: Freethought Publishing Company.
- [162] Palmquist, SR 2009. Kants Religious Argument for the Existence of God — The Ultimate Dependence of Human Destiny on Divine Assistance *Faith and Philosophy* 26,1: 3-22.
- [163] Parsons, K (ed) 2003. *The Science Wars: Debating Scientific Knowledge and Technology*. Amherst, NY: Prometheus Books.
- [164] Perry, M 2010. *Western Civilization: A Brief History*. Wadsworth: Cengage Learning.
- [165] Perry, M, Jacob, M, Jacob, J, Chase, M, & Von Laue, TH 2008. *Western Civilization: Ideas, Politics, and Society*. 9th edition. Wadsworth: Cengage Learning.
- [166] Polanyi, M 1958. *Personal Knowledge: Towards a PostCritical Philosophy*. London: Routledge & Kegan Paul.
- [167] Popper, KR 1957. *The Poverty of Historicism*. London: Routledge & Kegan Paul.
- [168] Popper, KR 1962. *Conjectures and Refutations: The Growth of Scientific Knowledge*. New York: Basic Books.
- [169] Popper, KR 1987. Natural Selection and the Emergence of Mind. In Radnitzky, G & Bartley, WW III (eds): *Evolutionary Epistemology, Rationality, and the Sociology of Knowledge*. Open Court, La Salle (Illinois): 139-155.
- [170] Popper, KR 1994. *In Search of a Better World: Lectures and Essays from Thirty Years*. London: Routledge.
- [171] Priest, S 2007. *The British Empiricists*. London, England: Routledge.
- [172] Quine, WV 1969. Epistemology Naturalized. In *Ontological Relativity and Other Essays*. New York: Columbia University Press.
- [173] Quine, WV 1981. *Theories and Things*. Cambridge, MA: Harvard University Press.

- [174] Rahman. F 1994. *Major Themes in the Qur'an* Minneapolis, Minnesota: Bibliotheca Islamica.
- [175] Rappoport, AS 1912. *A History of European Nations from the Earliest Records to the Beginning of the Twentieth Century*. London: Greening.
- [176] Raven, CE 1943. *Science, Religion, and the Future*. Cambridge: Cambridge University Press.
- [177] Ravetz, J.R. (1972). *Scientific Knowledge and its Social Problems*. Oxford: Oxford University Press.
- [178] Rawls, J 1993. *Political Liberalism*. New York: Columbia University Press.
- [179] Resnick, SA & Wolff, RD 1987. *Knowledge and Class: A Marxian Critique of Political Economy*. Chicago: The University of Chicago Press.
- [180] Reuter, N 2006. Methodenstreit. In Beckert, J & Zafirovski, M (eds): *International Encyclopedia of Economic Sociology*. London: Routledge.
- [181] Rosenau, P 1991. *Post-modernism and the Social Sciences*. Princeton, NJ: Princeton University Press.
- [182] Rostow, WW 1986. My Life Philosophy. *The American Economist* 30,2: 3-13.
- [183] Russell, JB 1998. Review of: The Foundations of Modern Science in the Middle Ages: Their Religious, Institutional, and Intellectual Contexts by Grant, E. *Early Science and Medicine* 3,1: 75-77.
- [184] Salleh, MS 2011. Islamic economics Revisited: Re-contemplating Unresolved Structure and Assumptions. Paper presented at the *8th International Conference on Islamic Economics and Finance*. Doha, Qatar: 19-21 December.
- [185] Salmon, WC 1978. Religion and Science: A New Look at Hume's 'Dialogues'. *Philosophical Studies: An International Journal for Philosophy in the Analytic Tradition* 33,2: 143-176.
- [186] Samuelson, PA 1955. *Economics*. 3rd ed. New York: McGraw-Hill.
- [187] Sandel, MJ 1982. *Liberalism and the Limits of Justice*. Cambridge: Cambridge University Press.
- [188] Sardar, Z 1984. Islamisation of Knowledge or the Westernisation of Islam? *Inquiry* 1,7: 40-45.
- [189] Sardar, Z 1988. *Islamic Futures: The Shape of Ideas to Come*. Kuala Lumpur: Pelanduk.
- [190] Sardar, Z 2004. *Desperately Seeking Paradise: Journeys of a Sceptical Muslim*. London: Granta Books.

- [191] Sarton, G 1924. The New Humanism. *Isis*, 6,1: 9-42.
- [192] Sarton, G 1927. *Introduction to the History of Science*. Baltimore: Williams & Wilkins.
- [193] Schaff, P 1953. *Encyclopedia of Religious Knowledge*. Vol. II. Grand Rapids, Michigan: Baker Book House.
- [194] Scheibe, E (ed. by Falkenburg, B) 2001. *Between Rationalism and Empiricism: Selected Papers in the Philosophy of Physics*. New York: Springer.
- [195] Scott, SP 1904. *History of the Moorish Empire in Europe*. 3 Vols. Philadelphia: Lippincott.
- [196] Sheehan, H 2007. The Assault on Scientific Rationality: Historical Analysis and Epistemological Response. In *The Assault on Science: Constructing a Response*. 13th European Skeptics Congress. Davenport Hotel, Dublin: 7-9 September.
- [197] Sheldrake, S 2012. *The Science Delusion: Freeing the Spirit of Enquiry*. London: Hodder & Stoughton.
- [198] Sheldrake, R 2013. Setting Science Free from Materialism. *Explore: The Journal of Science and Healing* 9,4: 211-218.
- [199] Schumacher, EF. 1973. *Small Is Beautiful*. London: Abacus Books.
- [200] Siddiqi MN 1981. Restructuring the Study of Economics in Muslim Universities. In: Al-Faruqi IR & Nasseef AO (eds): *Social and Natural Sciences: The Islamic Perspective*. Jeddah: King Abdulaziz University.
- [201] Siddiqi, MN 1994. Nature and Methodology of Islamic Political Economy. Paper presented at *The International Workshop on Islamic Political Economy in Capitalist Globalization*. University Sains, Malaysia.
- [202] Siddiqi, MN 2004. Keynote address at the *Roundtable on Islamic Economics: Current State of Knowledge and Development of the Discipline*. Islamic Research and Training Institute, Jeddah & the Arab Planning Institute, Kuwait: May 26-27.
- [203] Snow, CP 2001. *The Two Cultures*. Cambridge: Cambridge University Press.
- [204] Stapp, H 2007. *Mindful Universe: Quantum Mechanics and the Participating Observer*. New York: Springer.
- [205] Sterling, S 2003. *Whole Systems Thinking as a Basis for Paradigm Change in Education: Explorations in the Context of Sustainability*. Doctoral dissertation. University of Bath.

- [206] Suchodolski, B 1973. The Impact of Copernicus on the Development of the Natural and the Human Sciences. In Bieñkowska, B (ed): *The Scientific World of Copernicus: On the Occasion of the 500th Anniversary of His Birth, 1473-1973*. Dordrecht, Holland: D. Reidel.
- [207] Suppe, F 2000. Understanding Scientific Theories: An Assessment of Developments,1969-1988. In *Philosophy of Science*. Vol. 67 Symposia Papers: S102-115.
- [208] Tarnas, R 1993. *The Passion of the Western Mind: Understanding the Ideas That Have Shaped Our Worldview*. New York: Ballantine.
- [209] Tawney, RH 1926. *Religion and the Rise of Capitalism*. UK: Harcourt, Brace & World, Inc.
- [210] Taylor, MC 1990. Nuclear Architecture or Fabulous Architecture or Tragic Architecture or Dionysian Architecture or... *Assemblage* 11: 6-21.
- [211] Taylor, C 1995. *Philosophical Arguments*. Cambridge, MA: Harvard University Press.
- [212] Thompson, JW 1929. The Introduction of Arabic Science into Lorraine in the Tenth Century. *Isis* 12,2: 184-193.
- [213] Tinker, T 2004. The Enlightenment and its Discontents: Antinomies of Christianity, Islam and the Calculative Sciences. *Accounting, Auditing & Accountability Journal* 17,3: 442-475.
- [214] Toulmin, SE 1990. *Cosmopolis, The Hidden Agenda of Modernity*. Chicago: The University of Chicago Press.
- [215] Toulmin, S 1998. *The Idol of Stability*. The Tanner Lectures on Human Values, delivered at the University of Southern California, 9-11 February 1998.
- [216] Trigg, R1993. *Rationality and Science: Can Science Explain Everything?* Oxford: Blackwell.
- [217] Tuchman, BW 1985. *The March of Folly: From Troy to Vietnam*. New York: Ballantine Books.
- [218] Urbanowicz, CF 1992. Four-Field Commentary. *Newsletter of the American Anthropological Association* 33, 9: 3.
- [219] Van Fraassen, BC 1980. *The Scientific Image*. New York: Oxford University Press.
- [220] Velmans M 2009. *Understanding Consciousness*. London and New York: Routledge.

- [221] Von Mises, L 1978. *The Ultimate Foundation of Economic Science*. Kansas City: Sheed, Andrews & McMeel.
- [222] Von Mises, L 1985. *Liberalism in the Classical Tradition*. San Francisco: Cobden Press.
- [223] Weber, M 1930. *The Protestant Ethic and the Spirit of Capitalism*. New York: Allen & Unwin.
- [224] Weber, M 1946. *From Max Weber: Essays in Sociology*. Gerth HH & Mills, CW (eds & trans). New York: Oxford University Press.
- [225] Weinberg, S 1994. *Dreams of a Final Theory: The Scientist's Search for the Ultimate Laws of Nature*. New York: Knopf Doubleday Publishing Group.
- [226] White, AD 1876. *The Warfare of Science*. London: Henry S. King & Co.
- [227] Whitehead, A. N. (1984, reprint). *Science and the Modern World*. London: Free Association Books.
- [228] Windelband, W & Tufts, JH 1901. *A History of Philosophy: With Special reference to the Formation and Development of its Problems and Conceptions*. New York: The Macmillan Company.
- [229] Wittgenstein, LW 1969. *On Certainty*. Paul, D & Anscombe, GEM (trans) & Anscombe GEM & Von Wright, GH (ed). New York: Basil Blackwell and Harper & Row.
- [230] Zaman, A 2009. Origins of Western Social Science. *Journal of Islamic Economics, Banking and Finance* 5,2: 9-22.
- [231] Zaman, A 2011. Crisis in Islamic Economics: Diagnosis and Prescriptions. Paper presented at the *8th International Conference on Islamic Economics and Finance*. Doha, Qatar: December 19-21.
- [232] Zaman, A 2013. Logical Positivism and Islamic Economics. *International Journal of Economics, Management and Accounting* 21,2: 1-28.
- [233] Zaman, A 2015. Deification of Science & Its Disastrous Consequences. Pre-publication draft: *International Journal of Pluralism in Economics Education*.