Occidental Rationalism: Its Early Impact on the Foundations of Modern Science

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Abstract

Rationalist thought has had a deep and lasting impact on modern civilisation. This influence has pervaded almost all facets of the socio-politico-economic and scientific domains of contemporary human experience. Religiously-oriented societies have, however, throughout their encounter with rationalism, generally struggled to reconcile some of their doctrines and practices with the principles espoused by rationalist philosophy. This strained relationship has always been particularly acute in the area of epistemology. The impasse in the development and growth of the emerging discipline of Islamic Economics clearly reflects this tension. In this paper (the first of a two-part series), I first describe some of the epistemological challenges in Islamic economics and then explain the need for its proponents to critically engage with these issues. I trace the roots of this *problematique* to the indelible influence of ancient Hellenist philosophy, which initially penetrated Christendom selectively, and later on, more substantively through the encounter of the Christian West with the Islamic World. It was during this second phase that European Christian scholarship had become fully exposed to the works of the Arab-Muslim philosopher-cum-scientists of the time, the likes of Avicenna and Averroes. Although of Greek origin, the predominantly rationalist nature of their writings and commentaries, in both philosophy and science, had planted the seeds of the rationalist/scientistic worldview that was to emerge only much later in Europe. After explaining how this occurred, I show how it created an insuperable tension between religious orthodoxy and the fledgling new philosophical outlook of the day, leading ultimately

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to a schism in the unicity of human intellection. The ensuing dualism has subsequently had a most profound impact on all aspects of human thought and praxis in the modern age, with grave implications for both humankind and its environment. How this latter aspect evolved will be fully examined and explained in a second part of this study which will be published in a subsequent issue of this series.

Keywords: Islam, Christianity, Rationalism, Epistemology, Science, Economics, Islamic Economics, Islamisation of Knowledge

1 Background and Introduction to the Study

Following the end of colonialism and the emergence of independent Muslim 'nations' during the second half of the last century, the intelligentsia, social reformers and the general populace in these countries have been incessantly calling for a revival of their centuries-old Islamic values, institutions, and normative practices. Guided by the rich intellectual-scientific history of early Muslim civilisation, and with the concomitant realisation that many of the challenges of modernity stem from its embrace of Occidental[1] epistemology, Islamic scholarship realised quickly that any endeavour towards the revival of Islam in its socio-scientific realms was contingent upon a critical re-examination of key aspects of its knowledge enterprise (Sardar 1988; Iqbal 2007).

One of the fundamental points of agreement among Muslim intellectuals has been that there could be no dichotomy between the secular and sacred sciences in the Islamic scheme, and therefore no strict compartmentalisation of disciplines. Accordingly, there has been a concerted effort by these intellectuals to establish a framework of knowledge that is able to integrate both humanly-acquired and revealed sources of knowledge, generally not considered admissible as such in modern science. This attempt to reconstitute the process of scientific inquiry became known in Islamic academic circles as the 'Islamisation of Knowledge/Science (IoK/IoS)'. The social or human sciences were deemed most amenable to this paradigm shift, and consequently received the greatest amount of attention by scholars (see Hussain 2006). *Islamising* economics (IoE) and finance is an extension of this intellectual effort and is, in fact, considered one of its most important pillars (Haneef 2005; Hefner 2006). In a sense then, it serves as an important test case of this ambitious programme.

Notwithstanding the well-intentioned attempt by those involved in this international project, Muslim scholars are increasingly realising that their efforts to infuse modern science and its various sub-disciplines with an Islamic vision and ethos have failed to materialise the desired objectives (Chapra 2000; Choudhury 2001a; Sardar 2004; Setia 2005; Siddiqi 2008, 2011). Of all the disciplines, economics received the highest amount of intellectual investment by the proponents of the movement, yet the task of establishing even a rudimentary framework for the purposes of generating economic theories remains hitherto unfulfilled. As

[1] I use the term 'Occident' 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).

Mahomedy (2013) demonstrates, several irreconcilable discrepancies at both the theoretic and policy implementation levels continue to bedevil current writings on Islamic economics (IE henceforth). No consensus seems to emerge on many of the axiomatic issues that are crucial for the grounding of the discipline. This has been the central debility facing Islamic economists in establishing a distinct identity for their field of enquiry.

The reasons for this impasse in the development of the science are not due to any theological differences among the scholars. On this aspect there is a remarkable degree of consensus. As this paper clarifies, the areas of contention are primarily epistemological in nature. The rationalist approach, though in an 'Islamised' form, that the pioneers in the field had heretofore adopted to cultivate and grow their science has not succeeded in accomplishing the desired level of maturity for the discipline. There is now a growing sense among the new generation of Islamic economists that a fresh and somewhat novel (perhaps even radical) approach is needed to reinvigorate the IoE agenda. Interestingly enough, other attempts by the mainstream economics profession, not necessarily inspired by any religious impulses *per se*, to supplant the dominant neoclassical paradigm have met a fate similar to that of IE. Again, the common factor singled out by Kristol (1981) for the failure of these movements, though also ethically motivated, is that they have all remained firmly wedded to rationalism. What then is so distinctive about rationalist thought that it effectively cripples efforts at incorporating an ethical dimension into its frame of reference? Or more broadly, for the purposes of this paper, why is rationalist epistemology inimical to the kind of integrative knowledge sought by religious scholarship generally, and Islamic economics particularly?

In this paper, the first of a two-part series, I begin by sketching in broad outline, as a basis for this study, the key methodological approaches suggested by the Islamic economists to revive their discipline, and how this debate seems to be panning out into distinct paradigmatic positions. Given the critique against rationalism and its variants on this issue, I clarify first the meaning and sense in which I refer to this term and then set out to unravel how Occidental rationalism penetrated into the Latin West, eventually embedding itself deep into modern thought and civilisation. I show how during the first millennium after the advent of Christianity, the Church was largely able to manage and regulate the encroachment of Greek philosophical notions into its spheres of influence. However, the restraint and suppression of ideas, as always, could not be sustained indefinitely. In Section Five, I therefore describe how during its first major political encounter with the Muslim world, the Latin West had become fully exposed not only to rationalist thought, but equally so to the rich and advanced flowering of all of the natural sciences already underway in the Islamic empire at the time. During this period of engagement, it was the indelible impact of the ideas of primarily two Muslim philosopher-cum-scientists that created an insuperable tension between Christian religious orthodoxy and the fledgling new philosophical outlook of the day. How this occurred is discussed in Section Six.

After I conclude, I introduce the reader to the second part of this study, to be published in a subsequent issue of this series, in which I will fully explore

how the new rationalist epistemology evolved just prior to and during the period of Enlightenment. The profound implications that it subsequently had for the knowledge enterprise, specifically economics, and for modern society will be explained.

2 The Crisis and Impasse in Islamic Economics

It is now becoming widely recognised and acknowledged by both proponents and critics of IE that the discipline is at a crossroads and in a crisis of sorts (see Kuran 2004; Siddiqi 2004, 2008, 2012; Alatas 2006; Haneef 2007; Haneef & Furqani 2011; Choudhury 2008a; Zaman 2011; Salleh 2011; Khan 2013). Several international workshops and symposia have been inaugurated (IRTI 2004; IERC 2008; IIIT 2011; IEI 2012; ILKE 2013; ILKE 2014) to specifically address this issue and to explore ways in which the process could be regenerated. Several important implications for change clearly emerge from all of these deliberations.

2.1 Unravelling the Problem and the Way Forward

There is still a distinct call from some scholars (Kahf, Zarqa, al-Jarhi, and Limam) for the IE discourse to continue, with some minor modification, within its existing paradigm, including holding on to the fundamental assumptions of conventional[2] economics. These include the notions of scarcity, self-interest, rationality, optimisation, and the usual tools of analysis.[3] More 'moderate' voices from among this group (Siddiqi, Mannan, Chapra, and Sharif) have been lobbying for an 'accommodationist' approach in which these ideas are reconceptualised within an Islamic framework and/or counterbalanced with other Islamic values. The views of this group together, not surprisingly, are championed mainly by those scholars who have received their primary academic training in conventional economics, either in the Western world or in their home-country institutions that teach a similar curriculum.

The prescription described above, though expressed by the senior scholarship of the fraternity, has recently been losing much of the vigour and commanding influence it once enjoyed. Increasingly, it is being overshadowed by a growing chorus articulated by another group of scholars (Choudhury, Nasr, Zaman, Haneef, Aydin, Salleh, Iqbal, and Khan) who have been somewhat critical of the path hitherto pursued by the pioneers of the discipline. Led and inspired by the works of Choudhury (1997, 1999, 2000, 2004, 2006, 2007, 2008b, 2011) and others (Nasr 1986, 1989, 1991; Sardar 1985, 1988, 1989, 2004; Zaman 2005, 2009, 2011, 2013, 2015), they contend that it is because of this very entrenchment within the neoclassical paradigm over the past several decades that IE finds itself in a deep crisis today. More bluntly, as one observer outside of the disciple has noted, IE is so intimately conjoined "body and soul [to] mainstream

[2] I use the word "conventional" here to include the neoclassical, Keynesian and monetarist schools of economics.

[3] See for example, IRTI (1991).

economic doctrines that it has remained without [even] a distinctive birth-pang of its own" (Maurer 2002: 652).

This new and emerging group of Islamic economists together with some of the more established contributors in the field, whilst willing to acknowledge the contributions of the early scholars (see Haneef 2005, 2007, 2012; Aydin 2012; 2013; Iqbal 2012), have been calling for a fresh approach altogether; one that will not be encumbered with the 'baggage' of neoclassicism, as traditionally pursued by IE. They insist that instead of attempting to 'Islamise' the concepts of conventional economics and embracing its methodology uncritically, IE should reconstruct itself anew so that it thoroughly reflects its distinct worldview, ideals, and objectives. It has to derive its own terminology, if necessary, for the discipline and develop a methodology that is able to integrate knowledge, incorporating not only revelation but also Islam's rich legacy of scholarship as it has evolved over the centuries. How this process interacts with the colossal intellectual tradition of Western knowledge will then have to be carefully navigated.

The mission set before themselves is undoubtedly a highly ambitious one. Each of the stated aims have profound epistemological implications, and apart from Choudhury, Zaman, and Haneef among the Islamic economists, few have ventured into these areas. One of the most significant factors overlooked on this issue is that much of modern Islamic scholarship, contra its traditional counterpart,[4] has itself come under the grip of contemporary Modernist thought (Sardar 1988; Golshani 1995; Elmessiri 2006; Abu-Rabi' 2006). And perhaps it is for this reason that so many have unwittingly fallen into the entrapments of Occidental epistemology. In the Islamisation of economics particularly, this has been particularly acute. As Nasr (1991:388) reiterates, Islamic economics "failed to escape the centripetal pull of Western economic thought, and has in many regards been caught in the intellectual web of the very system it set out to replace". In a similar vein and out of deep concern for the future of the discipline, Choudhury (2011: xiii) laments that IE has so heavily "leaned and slumbered in the bosom of the neoliberal/ [neoclassical] paradigm" that it remains "uncritical and epistemologically barren".

Clearly then, if Islamic economics is to fulfil its raison d'être it has to thoroughly investigate the epistemological and methodological concerns about the discipline being raised by many of its scholars. To begin with, Islamic economists need to thoroughly interrogate the underlying episteme and fundamental concepts widely adopted in the Western tradition, and upon whose bases modern economics is predicated. This is critical if they are to discern "what is acceptable or unacceptable and *why this is so* ... [and to avoid its] foundational mistakes" (Haneef 2012: 210, i.i.o.). If this is not undertaken, then Islamic economics, even in the process of reinventing itself, may yet again (inadvertently) embrace neoclassical concepts into its economic theories and thus remain indistinct from it. Worse still, it may reinforce perceptions of force-fitting Islamic

[4] Traditional Islamic scholarship refers to classical Islamic scholarship on the so-called 'primary' Islamic sciences such as Quraanic exegesis, Hadith (Prophetic Tradition Studies), etc.

economics "into a Western economic mould" (Sardar 1988: 202; Aydin 2012). This study thus aims to initiate this process and thereby fill the gap where a "deep critical analysis" (Aziz et al. 2011: 772; see also Kahf 2004: 53) has been conspicuously absent in the drive towards the Islamisation of economics.

2.2 The Rationalist Quagmire

One of recurrent themes that always crops up in this discourse, and which has not been satisfactorily resolved as yet despite its pivotal role, is the interplay of reason vis-à-vis revelation in this process. Given that rationality forms the absolute bedrock upon which modernist science (and indeed neoclassical economics) is founded, reason, rationalism, and the scientific method are often equated with one another despite the critical differences between these terms (see Guénon 1953; Etzioni 1988; El-Mesawi 2007; Choudhury 2008c; Janz 2008; Elster 2009). Moreover, the Islamic economists have always insisted, even until recently (see Sharif 1996; Limam 2004; Al-Jarhi 2004; Zarqa 2004; Kahf 2004, 2012), on the methodological neutrality of these epistemic approaches and their analytical tools. They therefore simply attempted to either 'Islamise" rationalism (e.g. Kahf 1978; Mannan 1984), or at other times unequivocally endorse empiricism (Kahf 2012), as a basis for generating Islamic economic theory. That so many other generalist Muslim scholars in the last century, apart from the Islamic economists, have so uncritically embraced[5] modern rationalist philosophy and its surrogate, modernist science (Bakar 1991; Abu-Rabi' 2006, Nasr & Iqbal 2007), reveals a more-widespread desire on the part of contemporary Islamic scholarship to integrate these into the very fabric of Islamic thought.

On the basis of this imitative approach, Islamic economists assumed that all that was required, in principle, was for an ethical dimension to be grafted onto mainstream economic science and that the result would be a discipline of Islamic economics (Siddiqi 1988; Zarqa 1992). Clearly, by their own admission, this has not delivered anything substantive for the discipline for its proponents to claim it as something distinct from the neoclassical paradigm it wished to replace. It is not so much the eclectic approach *per se* that has been criticised for producing this unsatisfactory outcome but rather the very failure of (the project of) Islamic rationalism (Choudhury & Nadwi 1992; AbuSulayman 1993, Salleh 2011; Khan n.d.). This debility, however, is not unique to Islamic economics. As Kristol (1981) lucidly demonstrates with several examples, the central encumbrance that faces many of the dissenting movements in the economics profession against its current inadequacies is that they are all heavily entrenched within rationalist thought. Consequently, many of the prescriptions for change that they advocate have only added to the "intellectual confusion of our age" (Kristol 1981: 217).

What is so unique with the Islamic economists though, is that they are driven by a deep sense of certitude in the eternal values of the Islamic faith, with a concomitant confidence in the use of rationalist thought to operationalise those values. Consequently, they sought to fashion a distinct intellectual discipline

[5] I.e. *taqlid* in Arabic

for their science explicitly aimed at assimilating, in a rather mechanical way nonetheless, a divinely-oriented value system upon the foundations of modern rationalist philosophy. Why then did it fail to achieve any substantial degree of success despite the collective effort, conviction and intellectual investment of so many distinguished scholars in the field? Are there any historical precedents of attempts at this kind of assimilation-accommodation within an existing paradigm? If so, what were the outcomes and have they yielded any positive outcomes? Most importantly, what are the lessons that might be learnt from those efforts at engagement with other philosophical ideas so that their accomplishments could be replicated and failures avoided, if any? This study seeks to interrogate these fundamental questions, which lie at the very heart of the agenda to establish a uniquely Islamic approach to economic issues.

A journey through the annals of the monotheistic faiths, from Judaism to Christianity and Islam, reveals that each of its scholarly communities, during certain periods of their historical unfolding, have all engaged with the rationalist philosophy of ancient Greek-Hellenism. Even in those earlier interactions, the central issue was often one of seeking to reconcile their articles of faith with the principles of rationality. The experience of each civilisation in that encounter, though different in several important ways, was so intense and contentious at times, and had such profound implications, that it shook the epistemological foundations of their faiths to the core. This was particularly acute in the case of Christianity. According to some historians of science (Duhem 1906 as cited in Grant 1974; Copleston 1953; Grant 1962, 1997; Lindberg 1978; Duhem 1996; Pieper 2001; Gooch 2006), it was from the fallout of this engagement between the Christian Church and rationalist philosophy, notwithstanding the impact of Muslim scholarship on both, that lead to the subsequent birth of modernist science. It now appears that contemporary Islamic scholarship, in the field of economics at least, wishes to re-engage in that dialogue with rationalism. Its relevance for the topic, and the lessons that could be learnt from its previous history, are therefore critical and indispensable (Sardar 1988, 2004; Haneef 2005, 2007).

3 Meaning(s) of Rationalism and its Implications

The term 'rationalism' has been used, historically and in the present, to refer to several, sometimes conflicting, ideas. Not surprisingly, Lovejoy (1964:6) quips that it is one of those "trouble-breeding and usually thought-obscuring terms, which one sometimes wishes to see expunged from the vocabulary of philosophy altogether". A clear exposition of the sense of its usage throughout this study is therefore necessary.

In some contexts, rationalism is used to juxtapose the seventeenth-century rationalist philosophical thought of Descartes, Spinoza, and Leibniz with the empiricist views of Locke, Berkeley and Hume (Parkinson 1993; cf. Norton

1981). In other writings, it alludes to the tradition whose members seek to understand the world through "the practice of critical argument" (Bartley 1984: xxvi). Thirdly, there is also the "constructive" rationalism (a term introduced by Hayek (1955)) of those who believe in the rational capacity of people to autonomously construct the socio-economic order, including all of its morals and laws. Following many writers, I use the term "intellectualism" to signify the first sense of the term. To distinguish its second adoption from the rest, I will add to rationalism the appellation of "critical", as suggested by Popper (1983), Bartley (1987), and Agassi (Agassi & Jarvie 1987), all of whom associate themselves with that particular school.

But the specific sense in which I refer to the term generally, is related to a more widespread and historically embedded notion of rationalism, which has, in reality, fathered all of its subsequent variations. It denotes the belief that humankind, by dint of people's perceptive faculties *alone*, is fully capable of arriving at all necessary truths. There is nothing that cannot be comprehensively understood, i.e. "everything is intelligible" (Coleman 1995: 3), and therefore, there are no mysteries that would not eventually be unravelled by humankind on its own. On this view, 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 or 'ancient wisdom' (see Connin 1990; Raeder 2009). This hubristic attitude then, stems from an uncritical belief in the supremacy of human capacity for self-discovery.

Notwithstanding the important differences between the several variants of rationalism (Bartley 1987), there are certain common threads that bind them all together to a common cause. These are: (1) a cavalier dismissal of tradition and culturally-inspired values, (2) vehement antagonism towards the authority of revelation as a source of knowledge, and (3) the inclination towards magnification and deification of the human self. One therefore observes that as rationalist philosophy evolved over time, it conflated (from a truth-seeking methodology) into an all-embracing worldview with a decidedly atheistic and anti-religious outlook (see also Cottingham 1984). For the purposes of pointing out its relevance for this study I will, however, briefly summarise its epistemological implications (only) hereunder and reserve its detailed discussion for the next part of this study.

Firstly, by delinking rationality from revelation in the way described above, the rational process ceases to have any reflexive relation to its divine core so that it now rests entirely on human origins alone, whether intellectual (à la Descartes, et al.), or sensate (à la Hume, et al.). The mind thus becomes the ultimate determiner of reason (à la Kant)[6], and because of the rupture between reason and revelation, the separation between God-mind-matter, or in Kantian terms – Moral Imperative, Pure Reason, and Practical Reason, becomes deeply entrenched. Inter-causal relations between these are rendered impossible, and in the process, they fracture into "dichotomous competing premises of understanding reality" (Choudhury 2008b: 241).

[6] See his *Prolegomena to Any Future Metaphysics* (1902).

Secondly, due to the initial bifurcation in the unicity of the human intellect, a priori knowledge becomes completely disjointed from its a posteriori counterpart. This was a central issue for Kant (Kant & Friedrich 1949) – identified by Carnap (1966) as the problem of Kantian heteronomy – which he was nonetheless unable to resolve satisfactorily (see Bartley 1984). As a result of this failure at synthesis, apriorism and aposteriorism have ever since fiercely competed with each other in asserting the sole basis for the construal of knowledge claims (see Scheibe 2001). Dualism has thus become a defining feature of rationalist thought.

Thirdly, within this partitioned framework of knowledge, the moral law loses any sense of universality, both for its meaning and functionality. This, because ethical values are individualistically selected, and rationally derived on humanistic grounds (Perry 2010). Morality then depends for its legitimacy entirely on personal choice and commitment (see Laski 1971), and suffers thereby from an abiding sense of atomism and methodological individualism. How all of these latter-day developments unfolded I will elaborate upon in the next paper.

4 The Infiltration of Greek Thought into Christendom

Throughout the history of humankind, in all civilisational cultures, the search for the roots of knowledge and its associated structures have led to the flowering of numerous epistemological theories representing a vast array of preconceptions, beliefs and values, principles and viewpoints, and methodological approaches. Much of Western philosophy and culture, and its attendant ruminations on knowledge, both current and historical, can be traced to its ancient Greek–Hellenist origins (Cohen 2005; Choudhury 2006). What is noteworthy in the history of Western philosophy is that these streams of Greek thought, particularly the Presocratic atomist one, continue to shape the whole of its intellectual development right up to this day (Dilworth 2007).

Even during the medieval period when the Catholic Church served as the decisive authority and final arbiter in all socio-scientific matters, Greek philosophy was adapted, synthesised and integrated into Christian beliefs and values. The early Church Fathers such as Aurelius Augustinus (354–430 C.E) and later Christian Scholastics, crucially Thomas Aquinas (1225–1274), played a pivotal role in assimilating Neoplatonic and Aristotelian ideas into Christian theology and ethics (Gilson 1955; Knowles 1962; Lawton & Gordon 2002). During the early Middle Ages, the Platonic cosmological notion of a hierarchic structure of the universe, as expounded upon by Dionysius (cf. Corrigan and Harrington 2008), and later, the *biological* stream of Greek philosophy, as fully developed by Aristotle (Dilworth 2007; cf. Evans 1987), formed the basis of the dominant conceptions of nature adopted by the Church and accepted by men of learning at the time (Capra 1982; Bakar 1991). This medieval worldview as it metamorphosed had several interrelated implications for knowledge perception, which

later served as catalysts for the birth of modern science.

In this early period, scientific learning (which included philosophical reflection) was seen as the handmaid of theology[7] (Lindberg & Numbers 1986; Huff 2000; Grant 2006). Its value and utility lay largely in employing its intellectual tools to rationally defend Christian principles and to elucidate its articles of faith, that is, to use it primarily for apologetic purposes. Science, as it was then construed, did not enjoy any status as an independent domain of enquiry (Davis 2003). Of and in itself, juxtaposed against the certainties of revelation, it was casually dismissed as yielding only probabilistic knowledge and hence considered to have little intrinsic value. More generally, the purpose of early medieval science was to discover the meaning and significance of natural phenomena in relation to the matrix of God, humankind and creation. The 'Christianisation' of the classical Greek sciences in this period (Gilson 1940; Grant 2001), including Mathematics and Astronomy, was thus accommodated to serve this agenda and was, in fact, deemed to be the central task of scholasticism (Pieper 2001).[8]

These opportunities for Christendom to engage in dialogues with cultures outside of its own as a means to develop and enrich its theology were, however, not without challenges and risks (McGrath 2004). It could turn into a double-edged sword, as it were, and consequently even undermine, as it did, Christian orthodoxy, its doctrines, and ethics. When the political fortunes of Christianity improved with the conversion of Emperor Constantine in the fourth century (Lindberg 1983), Christian values and beliefs had begun to increasingly fall under the sway and influence of Greek sciences and cultural values, as succeeding Roman 'Christian' emperors took control over the post-Alexandrian Greek areas (Hatch 1890; Odom 1944; Hislop 1959; Johnson 2003; Kartanegara 2008). Some of the early church fathers, notably Tertullian (160–225 C.E), were, however, from inception, implacably opposed to the adoption of 'pagan philosophies' into religious discourse[9] (Grant 1997, 2006; Perry et al. 2008). At the heart of this tension between those willing to engage with, and accommodate, Greek thought, and those who were hostile to it, was with regard to the role of reason and the value of studying natural phenomena in apprehending the Truth. At best, these and other branches of the physical sciences which fell under the rubric of natural philosophy were tolerated to the extent that they may serve the cause of Christianity (Williams 2000). In this way, the handmaiden model escaped unchallenged for almost a millennium.

In response to these opportunities and the challenges they posed, various mechanisms were employed by the Church to control and regulate (outside) bodies of knowledge to ensure that the integrity of its authority in matters both temporal and eternal was not compromised. Epistemological principles that would serve the purpose of organising various pieces of knowledge in a hierar-

[7] Referred to in Latin as *ancilla theologiae*.

[8] Given the prevalence of this attitude from the very early days, Pieper (2001) suggests that the origins of scholasticism should rightly be traced to the sixth century and not the eleventh as commonly believed.

[9] This is epitomised in his celebrated question "What indeed has Athens to do with Jerusalem?"(Tertullian 1918: 246).

chical relation were developed, such that Christian theology was assured of its primacy at the apex of that hierarchy. To enforce such an ecclesiastical hierarchy of knowledge institutionally,[10] a class of intellectuals – the theologians – were tasked to select, adopt, legitimise and even suppress branches of knowledge to safeguard the interests of the Church (Feldhay 2006). But as greater acculturation occurred, scholastic theologians such as Anselm of Canterbury (1033-1109) and Peter Abelard (1079-1142) increasingly adopted the use of reason to interpret even the articles of faith and other Christian doctrines (Gilson 1955; Marenbon 1997; King, forthcoming), with Abelard even considering its use as indispensable for the Faith (French and Cunningham 1996; see also Grant 2001). Despite the concerns, condemnations and charges of heresy by the traditional, monastic theologians against the protagonists of this tendency (Bernard 1953), the rising tide in its favour could not stopped.

5 The Role of Muslim Scholarship

It was against this background that Christian scholars, at the beginning of the second millennium, were becoming eager to extend their intellectual faculties beyond theological complexities into the natural world. This urge to analyse and understand natural phenomena could not be readily satisfied since they "had virtually no base of natural knowledge on which to draw on" (Grant 2001:84). The groundwork was thus ready and fertile for a new momentous phase to begin in the history of Western Europe.

Notwithstanding the direct influence of ancient Greek thought on Christendom, it is incontrovertibly the encounter of the Latin West with the Islamic empire, especially in Spain between the eleventh and fourteenth centuries, which played the most decisive role in asserting once and for all the central role of reason in human knowledge in the Western world. Vast literary treasures previously unknown to the West and inherited from the Greeks by the Muslim Arabs but further enriched and developed by them, covering many areas of Philosophy, Mathematics, Astronomy, Medicine, and other social and natural sciences, suddenly became accessible to European scholars (Draper 1875; Haskins 1924; 1927; Gilson 1955; Mason 1962; Lindberg 1978; Grant 1997, 2008; Lewis 2009). As Thompson (1929:191) asserts, "the seeds of Arabic science first germinated in Latin Europe later radiated to other parts of Germany, to France, and especially into England". These works, in which "reason and rationality were prime factors", were of such significance that "Western Europe had never seen anything like it and would never see its like again" (Grant 2001: 87). In his earlier book *The Foundations of Modern Science in the Middle Ages*, Grant (1997) recounts in extensive detail how the translation of this new knowledge, primarily from the domains of science and natural philosophy, altered the course of Western intellectual life.

[10] Not surprisingly, and as alluded to earlier, this hierarchic structure is also mirrored in how reality and nature was conceived of, and even reflected in, the ecclesiastical hierarchies of Church authority.

As the pace of translation of this body of scientific literature increased, many of the outstanding scientists and philosophers of Islam such as al-Farabi (870-950), ibn Sina (980-1037), al-Ghazali (1056-1111), ibn Rushd (1126-1198), ibn-Bajjah (1090-1139) and al-Razi (865-925), to name just a few, became famous under the Latinised names of Alfarabius, Avicenna, Algazel, Averroes, Avenpace and Rhazes, respectively. These scholars had a most profound impact and influence on leading Christian thinkers of the medieval period, such as Thomas Aquinas (1225–1274), Albertus Magnus (1208-1280), and Roger Bacon[11] (1214-1294) (Hammond 1947; Gilson 1955). So whilst the thirteenth century in the West was characterised by a flood of literature from various traditions, the dominant stream that revolutionised all existing modes of thought was undoubtedly the whole corpus of Aristotelian works with their attendant commentaries reflecting Arab and Jewish thought (Knowles 1962). Given the predominantly rationalist nature of most of this discourse, it inevitably became the seedplot in which rationalism took firm root in Western intellectual thinking and continues to dominate its epistemology to this day.

Aristotelian scholarship and philosophy, as preserved, incorporated and adapted, and then transmitted by the Arabs to the Latin West, was mainly associated with the Peripatetic school (Leaman 1998; Conley 2006; Sisko 2006). The school, in fact, was initiated by Aristotle himself, and predictably therefore, sustained his tradition of seeking to expound on topics such as epistemology, ethics and politics, natural phenomena, and the use of logic (Furley 1999). This is in contrast to the Neoplatonic tradition, which emphasised Gnosticism, i.e. knowledge that "was oriented inwards and upwards rather than out to the physical world and society" (Emilsson 1999:361). Although the dominance of the Peripatetic school rapidly declined soon after the demise of its founder, it experienced a revival during the fourth century, and then became particularly influential in the Muslim world during the eleventh century (C.E.) (Nasr 1968; Sharples 1999). There were several ways in which the ideas of the school and the notions infused into it by its Arab exponents came to bear upon not only human thought in the latter Middle Ages, but also in terms of how modern science is conceived.

Firstly, the civilisational culture of the Christian West, according to Nasr (1972), had previously for centuries resembled that of the other great Oriental civilisations. But with the founding of medieval universities in Europe in the eleventh and twelfth centuries, not least of which were the universities of Paris, Oxford and Cambridge, a shift in orientation starts to become noticeable. This occurred when Aristotle's works were included in the curricula of several faculties in these centres of learning. It ensured that for the educated classes at least, reason and logic would henceforth become institutionalised in the Western intellectual tradition (Russell 1998). It was at this point in its history that the West had begun to embrace Occidental[12] rationalism as it primary mode of thought, which became the groundwork for its subsequent divorce from all forms of traditionalism and religion (Guénon 1953; Capra 1988; Choudhury &

[11] Bacon is credited for founding the modern experimental method in the West.

[12] See footnote 1 for the sense in which this term is used.

Nadwi 1992; Segesvary 2004).

Secondly, in the Peripatetic view, the cosmos is perceived and integrated into a pervasive rational system in which nature is considered a domain of study that must be examined, analysed and understood (Bakar 1991). Every occurrence has a reason, and is therefore intelligible and can be explained by non-mysterious factors (Coleman 1995). Using logic as its main instrument, or *organon*, this method of ratiocination was considered to be the key to gaining knowledge of the world. Among the other far-reaching implications of these epistemological premises (which will be examined later) is that the understanding of reality and even ultimate truth could be apprehended by the human mind and intellect independent of, and unabetted by, any scriptural revelation and/or other sources of divine guidance of supra-human, and thus supra-rational, nature (Chittick 1981). The reverberations of this notion were felt nearly four hundred years later when Galileo Galilei (1564-1642) was condemned by the Church for uttering an almost similar pronouncement, an issue I will also revert to later.

Thirdly, the Muslim/Arab philosophers whose philosophical works were enthusiastically embraced were equally the leading scientists of that period, as reflected in the socio-scientific milieu of the Islamic world at the time. In almost all of the fields of the natural and health sciences, the voluminous treatises of these scholars were translated into the various European languages and subsequently adopted for centuries at its universities (Arnold and Guillaume 1931; Scott 1904; Sarton 1927). The predominantly empirical nature of these sciences as developed by the Arabs, thenceforth introduced Western scholars to the validity of the inductive method of inquiry with its attendant tools of investigation, experimentation, observation, and measurement. In his *The Making of Humanity*, Briffault (1938:200-201) concedes that neither Roger Bacon nor his later namesake[13] has any title to be credited with inaugurating the experimental method into science, since "the experimental method of the Arabs was by Bacon's time widespread and eagerly cultivated throughout Europe". That the empirical scientific method was introduced to Europe long before the Scientific Revolution is further evidenced by other notable historians of science, such as Draper (1875), Holmyard (1931) and Durant (1980).[14]

Since each of the above intellectual advances played a pivotal role in setting the scene for the birth of modernist science, they simultaneously inaugurated what Tarnas (1993:416) aptly describes as the "epochal shift of the modern

[13] I.e. Francis Bacon (1561-1626)

[14] That advanced scientific learning was fully blossomed in especially Muslim Spain (see Scott 1904; Grant 2001), and which later swept into other areas of Medieval Europe well before the Age of Enlightenment, raises a number of interesting questions, and challenges several notions and interpretations of the history of science and civilisation rarely interrogated not only in popular opinion but also in scholarly circles. These include, inter alia, debates around the Conflict Theory (i.e. the view that there is an inherent conflict between Science and Religion), the Continuity Thesis (i.e. the hypothesis there was no radical discontinuity in intellectual development between the Medieval period and the Modern Scientific Age as implied by the term 'The Scientific Revolution'), the notion of a sterile and dark Middle Ages, and lastly, that Europe's past and present is integrally related to Islam and Muslims. For excellent expositions on the last mentioned issue, see Arnold and Guillaume (1931) and Goody (2004).

age". It was indeed so in that they not only liberated human beings "from the ancient and medieval cosmic womb", but thrust them unpityingly into a relativistic and impersonal universe in which "the human mind was now alone". This metamorphosis was hardly insignificant. Its profound implications have been explored and explicated upon by several historians and philosophers of science (Paine 1880; Haskins 1924; Sarton 1924, 1927; Burtt 1932; Gilson 1955; Nasr 1972; Capra 1982; Tarnass 1993; Lindberg 1983; Grant 2001, 2006; Huff 2003; Cohen 2005; Choudhury 2006, 2007). They, like Tarnas (1993), have attributed the breakdown of the previously held conception of an organic reality and thenceforth to a partitioned view of reality, to one or more of the periods within the revolutionary trinity of the Renaissance, the Reformation, and the Scientific Revolution. But more critically, one needs to ask, what specifically were the intellectual ideas within this entire epoch of change that provided the catalyst that actuated and brought to fruition, ultimately, this paradigmatic change?

Path-breaking ideas hardly ever occur spontaneously and never arise in a vacuum. They almost always occur as a reaction to other competing or complementary ones. Similarly, some notions and concepts may find currency only after other hypotheses have found acceptance, or contrarily, are initially rejected and dismissed as falsity when they might appear to clash with dominant ones. And in some cases, new and novel ideas spurt to life in response to severe crises[15] without which the new consciousness might never have ordinarily arisen. And lastly, new concepts or theories may take a while to embed, to germinate and take root, and to be watered with supporting hypotheses before flowering to full bloom. Only then may they attain a level of comprehensiveness and sophistication able to supplant or buttress competing or corresponding ones, respectively.

When one carefully examines the ushering in of the modernist (and subsequently, post-modernist) epistemological frameworks, then it is incontrovertible that these were undergirded, informed and shaped by several ideas and intellectual currents which occurred under most of these aforementioned conditions or circumstances. It is also crucial for a thorough appreciation of the issue to recognise that these ideas, events and the ensuing debates coalesced or at least succeeded one another, subsequently giving rise to these new paradigms. And strikingly, in underpinning all of these developments one cannot fail to recognise the lasting and incessant influence of Greek rationalism and individualism on them, as so articulately demonstrated by the many writings of Choudhury (1997, 2001b, 2004, 2006) and reaffirmed by almost all of the aforementioned scholars in the field.

6 The Tension between Faith and Rationality

How then, did the previously held conception of a unified approach in human intellection breakdown irrevocably? Two of the leading Muslim philosopher-cum-scientists that had a most profound influence on the Latin West were ibn

[15] See also see Kuhn (1962) for some example of these.

Sina (Avicenna)[16] and ibn Rushd (Averroes). The ideas propounded by these men, or at least attributed to them by historians, perhaps played the most significant role in steering the West towards adopting empiricist and intellectualist frameworks for the construal and justification of knowledge, which later evolved into comprehensive worldviews.[17]

Ibn Sina, for example, introduced Aristotelian cosmological and theological doctrines (in an enriched Islamic form) to Aquinas (and others, such as Bacon) who attempted to synthesise them – the famous Thomistic synthesis – within Christian theology (Gilson 1955). These cosmological notions, essentially linked to angelology, found resonance with that adopted by Dionysius (referred to earlier) but which presented certain difficulties to the Christian world (Bakar 1991). There was thus an eager attempt to embrace Avicennian angelology within Augustinian theology. But tied in to this peculiar interpretation of angelology was the concept of 'emanationism', i.e. the notion of the eternity of the world. Emanationism implies that the universe has always existed (in some material form) from eternity and by inference, therefore, denies the biblical account of its active creation by God ex nihilo in time.

Notwithstanding the philosophical appeal of this doctrine, its implications for Christian (and Islamic[18]) theology were far-reaching, shaking it at its very foundations, and despite Aquinas' attempt at synthesis, official theology was forced to reject it. But as Corbin (1960) argues, angelology was intrinsically bound with cosmology and one could not reject the one without questioning the validity of the other. The intricacies of this entire episode became so momentous at the time that Grant (2001:237) writes as follows:

> The issue of the eternity of the world was to the relations between science and religion in the Middle Ages what the heliocentric system of Copernicus was in the sixteenth and seventeenth centuries, and what the Darwinian theory of evolution has been since its inception in the nineteenth century.

Not surprisingly therefore, the tension between religious orthodoxy and those who sought harmonisation (of natural philosophy with religion) became intolerable, and hardly three years after Aquinas' death, several of his propositions were condemned by Church authorities (Grant 1997, 2001; Gilson 1955). It was this earlier condemnation of Aquinas in 1277 rather than the latter one in 1633 against Galileo, which, according to Duhem[19] (1906, as cited in Grant 1974; Gooch 2006), was responsible for inducing the first birth pangs of modern

[16] He was, for example, explicitly acknowledged by Roger Bacon as the "commander and prince of philosophy after [i.e. Aristotle]" (Bacon and Lindberg 1996:17).

[17] How this occurred is an issue that I will revert to in the second part of this study.

[18] Some of the ensuing debates that followed in the Christian world were already pre-empted by Muslim scholars almost 600 hundred years earlier. But their outcome, and its subsequent impact on scientific learning was very different to the experience in the West (see Fakhry 1983, 2001 and Dhanani 2000 for detailed and concise discussions of them, respectively).

[19] Duhem is considered by many to be the pioneer in the study of medieval science and natural philosophy (Grant 2006). See his *Le système du monde (*1914- 1959).

science. In rejecting certain Aristotelian-Avicennian theses, scientific imagination was stimulated by opening the door for alternative thinking on cosmological principles. This is evident in the writings of the John Dun Scotus and William of Ockham who, following the 1277 condemnations, chartered a course for scholasticism thenceforth radically different to that paved by Aquinas and Albert the Great and which led, ultimately, to the very destruction of medieval scholasticism (Lindberg 1978; Pieper 2001).

Apart from the highly-charged issue of emanationism, there were other sources of dispute and conflict that continued to feed into the unrelenting critique against the Thomistic synthesis. A number of logical contradictions began to emerge when attempts were made to combine syllogistic arguments with Christian theology vis-à-vis the omnipotence of God.[20] These seemingly intractable perplexities only served to further reinforce perceptions that the cannons of reason were not really compatible with faith, after all. Consequently, many of the clergy, led by William of Ockham, insisted that the tenets of Christianity should not be subjected to rational justification (Perry 2010). Faith had to prevail under all circumstances, even against the dictates of reason. By abjuring the use of reason in complementing revelation, these scholars thereby "snapped the link between reason and faith that Aquinas had so skilfully forged" (Perry 2010:174). On this account alone, the implications for epistemology and the relationship between science and religion were phenomenal.

Firstly, in seeking to emphasise the absolute and unlimited freedom of God, a different view of the universe, "radically contingent in its being", emerged during the fourteenth century (Wallace 1978:109). Those who adopted this new outlook, such as Ockham and Scotus, rejected any 'necessitarianism' in the creative activity of God that the earlier theologians[21] insisted upon (see Pieper 2001). In so doing, the effect of secondary causes could be dispensed with and replaced with the direct causality of the Almighty. The omnipotence of God was once again firmly re-attested to, without any recourse to the need for intermediary agents. By inference, therefore, there were no a priori laws that governed the natural world and searching for any underlying rationality in its functioning would be trivial. A further implication of this was that the struggling marriage between faith and reason would be irrevocably broken to the point that they are often construed in the modern world as mortal enemies to one another.[22]

Secondly, the nominalism[23] that this new outlook gave birth to meant that any entity has no independent existence outside of the human mind, i.e. it has neither spatial nor temporal reality outside of human apprehension and cognition. Knowledge, consequently, can only be singular and individualistic,

[20] For example, it appeared that conviction in God's absolute power and/or knowledge was being diluted in order to acquiesce to an unqualified belief in the rules of logic. See also Grant (2001) for a detailed explication of other examples.

[21] Such as Siger of Brabant (see later for further details on his role).

[22] One has to only observe the open hostility between the religionists and scientists in many academic circles to appreciate the level of antagonism that prevails. See Connor (2011).

[23] The view, generally, that rejects the idea of universals – words that can be applied to individual things having something in common (*Encyclopaedia Britannica* 2010).

lacking any kind of universality. It therefore exists, as it were, only in the mind of the knower. The fatal blow to the certainty sought by the philosopher had been struck. As described by Grant (1962), Lindberg (1978) and Duhem (1996), with the sustained attack and undermining of Aristotelian philosophy and physics by a whole new generation of Franciscans[24] from the School of Paris, earlier sceptical doubts about the infallibility of knowledge began to re-emerge. All knowledge (of the material world), according to them, arises from sensation and since the senses are deceptive, knowledge is, at best, only probabilistic. The result, according to Copleston (1953, 1973-1974), Wallace (1978), and Pieper (2001), was empiricism[25] and though anchored in theology, it was unable to engage with it on its own terms. Faith and reason in the Christian world would thenceforth go their own way, neither feeling the urge to be bridled by the other.

There is yet another remarkable twist in the counter-reaction of Christian theology to Avicennian cosmology and emanationism, alluded to by Gilson (1955) but certainly highlighted in Corbin (1960). To preserve belief in the omnipotence of God, and His creation of the universe ex nihilo in time, the mediating role of the angels in the heavens between the terrestrial and celestial worlds was rejected outright. The heliocentric conception of the universe as propounded in Copernican theory thus actually served the interests of theology, in this respect at least, that if the earth was but merely a planet among the many circling in the open sky and not 'fixed under the heavens' then the metaphysical necessity for the heavens to be populated by the angels would be obviated. The Christian view of strict monotheism was consequently vindicated and thus, contrary to popular opinion, the encouragement from many clerics to Copernicus to publish his writings (see also Lindberg & Numbers 1986) actually marked an alliance between the Church and positivist science, which, though only later, was to become a source of conflict between the allies (Corbin 1960).

The other critical intellectual current, apart from Avicennism, which impacted perhaps even more profoundly in entrenching rationalist tendencies in Western thought, was Averroism, after the Muslim philosopher-cum-doctor of law, ibn Rushd (Averroes).[26] Being a well-known commentator on Aristotle, many of his works were translated, avidly studied and had deeply impressed prominent Christian clerics, leading eventually to the formation of a school in the West known as 'Latin Averroism'. The school was located at the very centre of theological study in Europe at the time, the University of Paris,[27] and its influence spread rapidly during the Renaissance to Italy (Little 1947; Duhem

[24] Such as Ockham, John of Mirecourt and Nicholas of Autrecourt.

[25] That branch of philosophy which holds that all concepts originate in experience, are applicable to things that can be experienced, and that beliefs or propositions can be knowable or justified only through experience (*Encyclopaedia Britannica* 2010).

[26] So influential has his thought been on the West that an American-based organisation, Western Culture Global, has ranked him as the 11th most important hero of Western culture and as the one who should take credit for transmitting Aristotle's ideas to the world (see http://www.westernculturegloba l.org/averroes.html.)

[27] Considered to be perhaps the most important university in medieval Europe (Grant 2001). See Little (1947) for a fuller discussion of the tensions that existed between the various religious orders at the institution.

1996; Hasse 2004). Averroes' writings sparked heated intellectual controversies and raised intense theological firestorms on several fronts, but being primarily a commentator on Aristotle, many of the controversies that his writings provoked were wrongly attributed to him rather than to his principal (Little 1947; cf. Grant 2001). Nonetheless, the most contentious one, in the eyes of the Establishment at least, and which is relevant for our purposes here, was the notion of the "double-truth" theory (Copleston 1957).

The doctrine of double truth expounded upon by Averroes is itself not without dispute, firstly with respect to its actual formulation, and secondly, to the origin of the theory (Corbin 1962; Ebbesen 1998). But the interpretation which drew the ire of the ecclesiastical authorities, and adopted by the Latin Averroists, was that the truths arrived at (separately) through reason and faith need not necessarily concur (Henry 2000), and could even contradict each other, according to some interpretations (see Copleston 1957). Although the very idea of conflicting truths appears to be inconsistent with rationalist principles (Guttman 1927 as cited in Kohut 1980), the theory was actually designed to defend rationalism (Ross 2011). It was in all likelihood a heuristic device introduced to allow theologians steeped in the philosophical/scientific tradition to either (1) tentatively accept those rationalist (or scientific) conclusions that contradicted a literal reading of the scriptures whilst still remaining broadly committed to the religion itself, or (2) to reinterpret the religious texts in a manner more congenial to their rationalist conclusions. Predictably, the doctrine found great appeal particularly among the secular masters at the University of Paris.

But the Church viewed the issue in a very different light, seeing it either as an insidious attempt to subvert religious dogma, or, as an affront to its sole authority to interpret the divine scriptures (Courtenay 1989; see also Perry 2010). In the first instance, the theory might easily be used a ruse to mask the heresy of its proponents. Or more seriously, the doctrine implied that the primacy of revelation as the final arbiter in any conflicting claims of truth-value could easily be compromised and diluted, a deviation that the Church would never tolerate. As Grant (2001:7) recalls

> there was one boundary line that reason could not cross. Medieval intellectuals, whether logicians, theologians, or natural philosophers, could not arrive at conclusions that were contrary to revealed truth – that was heresy.

The gravity of this thesis was consequently weightier than anything that the Church had to contend with thus far vis-à-vis the "sayings of the condemned pagans".[28] That Albert the Great and Thomas Aquinas were both summoned to produce and publish treatises in such quick succession against the doctrine, demonstrates that the fear of Averroism spreading and taking root beyond the academic halls of the University of Paris was not unfounded. Despite the very real threat of even having to close the University to counter its propagation,

[28] This derogatory phrase is attributed to the church-father, Tempier (Tempier 1277 in Glick et.al 2005).

efforts to contain Averroism were frustrated (Little 1947; Perry et al. 2008). One of its arch protagonists, Siger of Brabant (1235-1281), who served as Rector of the University, was ultimately tried by the Inquisition, found guilty of heresy and sentenced to life-long imprisonment (Torrell 2005; cf. Mahoney 1974). That he was tragically assassinated whilst under detention only served to elevate him as a martyr to the cause of free, rational thought.

During the fourteenth century, Averroes' works, embedded with his ideas, were further eagerly studied and disseminated to the intellectual elite of Venice and to some of the most respected scholarly centres of Italy, receiving much patronage from the Italian nobility (Gilson 1938; Hasse 2004, 2006; Carboni 2007). With the 'Reconquista' of Spain from the Muslims and the advent of printing, both of which occurred towards the end of the fifteenth century, Europe was henceforth more fully exposed to Averroist thought. Paradoxically enough, even his most ardent critics, those who damned him for his perceived heresy, were forced to embrace and employ the very intellectual tools for which Averroes was condemned, to refute his writings (Bakar 1991; Grant 2001). Latin Averroism attracted many adherents from across a wide spectrum of Jewish, Christian and Muslim intellectuals (Beum 1975). The rationalist tide that began to sweep through Europe and the Near East, it appears, was unstoppable and irresistible. As Gilson (1938:65) further reminds us

> the existence of a medieval rationalism should never have been forgotten by those historians who investigate into the origins of the so-called modern rationalism, for indeed the Averroistic tradition forms an uninterrupted chain from the Masters of Arts of Paris and Padua, to the "libertins" of the seventeenth and eighteenth centuries.

In fact, Averroes' personal explication of the double-truth concept and arguments for its accommodation within broader theology was echoed five hundred years later by none other than Galileo himself, in repudiation of his condemnation by the Church.[29] It was essentially Galileo's position that natural philosophy (science, but specifically mathematics), exercised through reason and sense-experience, be elevated, even if against theology, as the final arbiter in physical matters, that lay at the root of his ostracisation by the Church; not so much his demonstration of a heliocentric cosmos as such (Burtt 1932, Russell 1998; Lindberg & Numbers 1986). As previously indicated, heliocentricism itself, at the time, might have actually served the cause of Christian theology, in defending the omnipotence of God, rather than bring it into disrepute (Corbin 1960).

The preceding discussion serves to highlight the critical role that Greek ideas, as appropriated and enriched by Muslim philosophers,[30] played in transmitting to the West a bifurcationist approach towards knowledge and the attainment

[29] See Lee (2010) and Finocchiaro (1989) for a fuller discussion of the controversy that raged between Galileo and the Inquisition.

[30] Not surprisingly, ibn Rushd (Averroes) is credited by some for being the founder of secular thought in the Western world (Fahlbusch and Bromiley 1999; Fakhry 2001).

and/or interpretation of Truth. These created intractable problems for the ecclesiastical authorities. Despite the heroic efforts of Christian scholasticism to harmonise rationalist ideas with its theology, the tension eventually became intolerable so that ultimately these attempts at reconciliation had to be denounced by the authorities. Notwithstanding these official condemnations, the spread of the new philosophy took root within the post-Renaissance world which served as a fertile seed-plot for the cultivation of new and fresh ideas.

7 Conclusion

In this study, I had set out to investigate the reasons for the apparent stagnation in the Islamisation of economics, considered an important test case in a much broader project of the Islamisation of sciences. There is a clear recognition now that the primary reason for this paralysis in Islamic economics is largely due to its early contributors attempting to construct their science on the foundations of neoclassical economics. In order to do so, they embraced its rationalist underpinnings and attempted to remould it in an 'Islamised' form by inserting within its framework a set of ethical values as interpreted from its revealed sources of guidance. This approach did not produce the kind of enterprise that its pioneers had originally aspired to achieve. Up to this point in the discussion there seems to be a general consensus among the Islamic economists. But there is still much debate on why specifically, this approach towards an Islamised rationalism has failed to deliver on its expected outcomes.

To help clarify this fundamental issue requires a critical exploration into the very nature of rationalist thought and how from its Occidental origins, it came to embed itself into the Christian world and from thereon into modern thought and civilisation. This paper seeks to provide an answer to the first part of this question. It demonstrates that in the first millennium, ancient Hellenist philosophy, largely viewed as secular learning, was made to serve as the handmaid of theology, despite protestations from some clerics to this accommodationist attitude towards 'pagan' philosophies. Most of these 'foreign' propositions and key ideas were therefore controlled and regulated so that it became subordinated towards exclusively promoting a rational understanding of Christian doctrines. In this way the authority and interests of the Church were protected and maintained.

From the beginning of the second millennium, however, when Europe began to politically engage with the Muslim empire, it became fully exposed to the already advanced stage in the development of all of the natural and social sciences in that part of the Islamic world. As Grant (2001: 85) chronicles, it "was as if the West had left a barren desert and moved to a richly watered oasis". This engagement brought with it a deluge of richly developed ideas and philosophical approaches to knowledge and science, the like of which was unprecedented in the entire history of the Western world. Deeply embedded in many of the numerous treatises that were translated were the rationalist ideas of the Greek philosophers, particularly Aristotle, and those of their Muslim-Arab commentators. That their ideas quickly reached mainland Europe, setting off

the Renaissance should therefore, hardly come as a surprise to the avid reader. The seeds for the birth of modern science, clearly, had already been planted in this early period.

But perhaps the most significant impact on the development of Western epistemology came from the contributions of two of Islam's leading philosopher-cum-scientists, ibn Sina (Avicenna) and ibn Rushd (Averroes). For reasons already explained, their scientific and epistemological ideas were eagerly embraced by both the Christian scholastics and the intellectual elite of Europe. But these also stirred up heated intellectual controversies which threatened the legitimacy of the Church as the final arbiter to any claims of Truth. Averroism began to entrench itself at the very centre of institutions set up by the Church, such as the University of Paris (Little 1947), and even far beyond, as it began its rapid spread to other parts of Europe. The Condemnation of the Church against Thomas Aquinas signalled the first crack in the delicate efforts at reconciling natural philosophy with theology. It was the self-same issue that emerged centuries later in the Condemnation of Galileo that appears to have marked the eventual cleavage in this highly charged and contentious episode in the intellectual history of Western Europe.

Interestingly enough, although early Muslim scholasticism also came under the grip of Hellenic epistemological influence (Choudhury 2006a), Islamic epistemology was able to survive its onslaught and maintain its integrity during the early period of Islamic scholarship. In contradistinction, and quite paradoxically, it was through the very same Muslim expositions, commentaries and enrichment of Greek ideas that Western Christian thought, hitherto still largely unified vis-à-vis its spiritual vision (Tinker 2004), collapsed and crumbled under its weight. This, despite the leading role played by Christian scholars, particularly Aquinas, to integrate and harmonise faith with rationalist principles, and thereby articulate and systemise a definitive Christian theology in which the relationship between revelation and reason was to be negotiated.

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

All of the developments described in this paper had added to the toolbox of Western intellectual thought and provided it with the key instruments which were subsequently used to form the two dominant schools of rationality (see Bartley 1987) during the Enlightenment. This happened because after the advent of the Scientific Revolution, with science and religion each charting its one way forward (in the West at least), an enduring dualism begins to characterise all facets of modernist thought and praxis.

Because the very foundation of human intellection had been split, with the scientific enterprise thenceforth asserting the capacity for the self-generation of knowledge independent of revelation, all subsequent developments in the socio-scientific fields embodied this individuating characteristic. Atomisation thus

pervaded their inner structures through and through (Choudhury 2000), and it continues to transmit and replicate this element in its onward trajectory across all domains. This manifests itself as methodological individualism/reductionism in scientific enquiry (Buchanan 1960; von Mises 1978; Kincaid 1997), and as competition and rivalry in all of the institutions of polity, economy and society (Bateson 1973; see also Buchanan 1964). As a means to deal with the ensuing tension and conflict, calls for greater pluralism are invoked, which only serves to further intensify differentiation. Given this cycle of perpetual individuation, unification becomes ever more remote and unattainable.

In the area of epistemology, for example, which is the focus of this study for the development of IE, intellectualism and empiricism aggressively competed with each other to claim exclusive authority in all assertions of truth propositions, with the most outstanding of scientists and philosophers aligning themselves with either tradition. Each proffered an episteme that radically denied any significant role for the other, and by so doing, drove a wedge between a priori and a posteriori forms of knowledge. Immanuel Kant (Kant and Friedrich 1949) eagerly sought to reconcile these rival epistemologies, but his efforts failed to synthesise them harmoniously (Bartley 1984, Tarnas 1993). In fact, by divorcing morals and ethics from revelation, and locating it within the ambit of pure reason alone, Kant (1931) sharpened the division into three seemingly irreconcilable compartments, these being God, mind and matter (see Choudhury 2008b).

All of these epistemic contestations did not escape the attention of the social scientists of that period, who sensed within these various strains of Enlightenment thought a clear agenda of hegemonising rationality on all branches of learning. It unleashed the radical Counter Enlightenment or Reformation Movement in which the classical social scientists sought to defend their domain against the encroachment of the rationalist criteria of knowledge into their fields of enquiry (Berlin 1979, 2000). These differences, in turn, incarnated yet another "gulf of mutual incomprehension" between the intellectuals of the natural sciences and those from the humanities, marked with "hostility and dislike, but most of all lack of understanding" (Snow 1959:3-4).

The disintegration, however, did not cease at this point but proceeded ever further. Each domain then separately underwent further fractionalisation so that all of human enquiry ultimately became compartmentalised into distinct and water-tight disciplines. In offering rival explanations of reality, disciplines within each field then competed with the other, claiming that their philosophies and cosmologies "apply [exclusively] to all of science" (Bartley 1982:8; see also Mayr 1969). The continuing "disciplinarization and professionalisation of knowledge" served to ensure that this tension and antagonism became institutionalised at all of the various centres of learning, particularly universities (Wallerstein 1996:7; see also Zaman 2009). With the increasing need of the modern state for more exact forms of knowledge on which to base its policy decisions, these tensions and differences then spilled over beyond the academic walls of universities and into the body politic of society (see Fischer 1998). Clearly, all of these developments were to have huge implications for humankind, the

environment and the future survival of each.

The science of economics, given its multi-disciplinary character, was deeply implicated in all of the changes described above. Historically, it never enjoyed the status of a completely autonomous discipline because of its inextricable links with ethics, politics, history, philosophy, jurisprudence, and even the natural sciences (see Häuser 1988; Hall et al. 2001). But as the rationalist tide began to sweep through academia and all of its institutions during the Enlightenment, the science of economics had been rent asunder from its historical moorings and tossed and pulled in several directions as rival groups each championed the rightful place of economics, and, more critically, argued for what its appropriate methodology ought to be. Not surprisingly, the science has undergone successive waves of 'canonical *methodenstreite*' from the 17$^{\text{th}}$ century onwards until the present times (Rostow 1986; Pheby 1988; Reinert 2003; Louzek 2011). That neoclassicism has prevailed as the mainstay of economic theory for so long, despite many challenges to its dominance (see Arnsperger & Varoufakis 2006; cf. Colander 2000; Davis 2006), reveals the enduring impact of rationalist philosophy and all of its surrogates on contemporary conceptions of knowledge.

Returning now, therefore, to the primary topic of interest of this study, which is to evaluate the suitability of rationalist epistemology for the development of IE theory within an integrated framework, one is left perturbed as to how so many of the critical debates alluded to above have escaped the attention of the Islamic economists.

To fill in this missing gap, these issues will be fleshed out and fully explained in the next part of this study. It will be demonstrated that due to its reductionist and individuating essence, rationalist epistemology is fragmentary and divisive by its very nature. Consequently, it will always act as an insurmountable obstacle in any quest towards an all-embracing theory of socio-scientific enquiry which is able to integrate knowledge into a unified whole. This perhaps explains why the search for such a primal and irreducible premise of knowledge continues to elude modern scholarship, both Western and Muslim. Its far-reaching implications for any future prospects for Islamic economics will then be discussed.

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