

BARBOUR'S TYPOLOGIES AND THE CONTEMPORARY DEBATE ON ISLAM AND SCIENCE

by *Stefano Bigliardi*

Abstract. Despite various criticisms, Ian Barbour's fourfold classification of the possible relationships between religion and science remains influential. I compare Barbour's taxonomy with the theories of four authors who, in the last four decades, have addressed the relationship between science and religion from a Muslim perspective. The aim of my analysis is twofold. First, I offer a comparative perspective to the debate on science and Islam. Second, following Barbour's suggestion, I test the general applicability of his categories by comparing them with a discourse on science and religion that is not focused on Christianity. In the first section, I reconstruct Barbour's typologies, recalling some major objections to them, and arguing why despite the latter, Barbour's model is employed for the present analysis. I also reconstruct Barbour's parallel model for the relationships between different religions. In the second section, I reconstruct the discourse on science and religion developed by the Palestinian-American scholar Ismail Raji al-Faruqi. The third section is devoted to the ideas of the Persian-American scholar Seyyed Hossein Nasr. In the fourth section, I examine the views of the Iranian author Mehdi Golshani. The fifth section reconstructs the theories of the Algerian author Nidhal Guessoum. In the final section, I argue that a generalized use of the "integration" concept to refer to the entire debate on Islam and science is unhelpful. While these positions do not appear to instantiate Barbourian integration of science and religion, they do move toward what Barbour (skeptically) describes as integration between religions.

Keywords: Ismail Raji al-Faruqi; Ian Barbour; Mehdi Golshani; Nidhal Guessoum; integration; Islam and science; Seyyed Hossein Nasr

BARBOUR'S TYPOLOGIES

These pages constitute an attempt to compare the positions of four different authors who explore the relationship of religion and science from a Muslim perspective. These contributions are compared both with one another and with the concepts deployed in Ian Barbour's typologies of possible interrelations between religion and science and between religions. The aim of the analysis is twofold. On the one hand, the comparative examination

Stefano Bigliardi is a researcher at the Center for Middle Eastern Studies (CMES), Lund University, Finngatan 16, 223 62, Sweden; e-mail: stefano.bigliardi@cme.lu.se.

constitutes a contribution to the study of the contemporary debate on Islam and science, whose varied landscape calls for an updated, critical reconstruction. The authors I focus on are particularly significant: Ismail Raji al-Faruqi and Seyyed Hossein Nasr have shaped and influenced the debate on Islam and science over the last four decades; the writings of Mehdi Golshani and Nidhal Guessoum incorporate thorough discussions of al-Faruqi and Nasr's positions, from which they diverge substantially. These pages aim therefore at observing this discussion from an external point of view. On the other hand, my mapping attempt constitutes a test of Barbour's categories, which I adopt critically, by taking into account both criticisms leveled at them and Barbour's own suggestions for their employment.

As is well known, Barbour identifies four "views" or "types" of relationship between science and religion. The first is *conflict*, according to which science and religion make opposed, irreconcilable claims regarding the same domain. The second is *independence*, according to which science and religion are separate domains. According to the third, *dialogue*, those who engage in the discussion of science and religion should emphasize methodological parallels—for instance, the use of analogies or the explanatory aim. Dialogue also means that science might recognize that the data it uncovers raise questions that can be addressed by religion. The fourth type of interaction is *integration*, according to which religion and science cooperate in a systematic metaphysical synthesis (Barbour 2000, 10–34).

Barbour's presentation of the four categories is not coarse-grained, neutral, or static. Barbour sees each type as having several variants; each of the four categories is only a template for several options having substantial features in common. For the sake of the present analysis we can recall some variants grouped by Barbour under the first and fourth types of relationship. Conflictual, in Barbour's opinion, is the view of *scientism*, according to which matter is the fundamental reality, and the scientific method is the only reliable way to study it. Equally conflictual, Barbour holds, is *biblical literalism*, according to which the Genesis narrative should be read as a description of the creation of the universe (Barbour 2000, 11–7). At the other end of the spectrum, Barbour lists as integrative *natural theology*, which infers (or supports) the existence of God from nature (Barbour 2000, 28–30); Barbour also sees *theology of nature* as integrative, since it has its own conceptual sources but incorporates scientific data; for instance, if science ascertains a threat to the environment, theology of nature can promote action to avoid it (Barbour 2000, 31–4).

Barbour does not hide his own critical attitude toward the four conceptions. For instance, he sees conflictual views as unbalanced: in his opinion, scientific materialists present as scientific ideas that are not part of science itself (Barbour 2000, 14 and 36), whereas biblical literalists focus

unnecessarily on a pre scientific cosmology as an essential part of faith (Barbour 2000, 16 and 36). As for the perception of conflict, Barbour states that it is overemphasized in the media (Barbour 2000, 10). Barbour judges independence unsatisfactory, since nature is not just an “impersonal stage” for the religious experience; religion, he argues, offers and aims at an all-encompassing interpretation of experience: sooner or later one feels the need for a unified worldview (Barbour 2000, 22 and 36). Barbour favors dialogue and integration, and finally supports a *systematic synthesis* that transcends both natural theology and theology of nature. In other words, Barbour aims at a *metaphysical synthesis* to which both science and religion contribute (Barbour 2000, 34–8).

Among the overall criticisms leveled at Barbour’s typology, Geoffrey Cantor and Chris Kenny’s examination (Cantor and Kenny 2001) stands out as particularly severe. I see it as articulated in three main points. First, the two authors point out that the use of the term *conflict* is an anachronism when referring to theories elaborated before the late nineteenth century. They emphasize that the concept itself tends to create the conflict instead of describing it (Cantor and Kenny 2001, 767–9). Second, Cantor and Kenny observe that the two terms *science* and *religion* are “amorphous” and “protean,” qualities transmitted to the construct emerging from their conjunction; hence the usage of the two terms entails too bold a generalization (Cantor and Kenny 2001, 772). In the context of the same objection, Cantor and Kenny note that the meaning of *religion* is usually modeled on Christianity (Cantor and Kenny 2001, 772). Third, since Barbour is mainly concerned with concepts themselves, Cantor and Kenny maintain that a study based on his categories would overlook other intertwined motivations behind intellectual debates, like personal and institutional factors (Cantor and Kenny 2001, 773).¹ Cantor and Kenny’s counterproposals are a (cautious) conceptualization in terms of “problem(s)” instead of conflict (Cantor and Kenny 2001, 770), and a more encompassing study of science and religion focused on fine-grained biography instead of abstract domains (Cantor and Kenny 2001, 775). In their severe judgment, Barbour’s taxonomy is “. . . unhelpful, if not totally untenable” (Cantor and Kenny 2001, 778).

In his response to Cantor and Kenny, Barbour (Barbour 2002) generally agrees that the terms *religion* and *science* have to be used *cum grano salis*. However, he points out that historians still find them useful (Barbour 2002, 347; cf. Brooke 1991). A typology, Barbour maintains, retains an important didactical use; a guidebook, he observes, does not substitute exploration, but rather helps it (Barbour 2002, 348).² Barbour also emphasizes the dynamic, narrative character of his four types and their variants, which can be seen as successive stages in one thinker’s attitude toward the two fields. He maintains, for instance, that “the line between Dialogue and Integration is also somewhat arbitrary” (Barbour 2002, 350). Barbour also asks if his

taxonomy is too focused on Christianity to be useful in the expansion of the science and religion dialogue debate (Barbour 2002, 353).

In the same response to Cantor and Kenny, Barbour sketches a fourfold taxonomy for the relations between religions modeled on the taxonomy for science and religion. *Conflict* is in this case the view according to which only one religion is true and the others are false. Under this heading Barbour also places the idea that, from the point of view of a specific religion, other religions are approximations to the same truth, a view that he dismisses as condescending. *Independence* sees religions in the framework of cultural relativism. Barbour rejects this attitude, which, he holds, has the merit of enlightening the *functions* of religion in a particular setting, but discourages the transcending of the specific cultural setting from which a specific scholar studies a religion. When this view is adopted, Barbour argues, other religions lose relevance. *Dialogue* is a confessional approach to other religions that tries to combine loyalty to one's own tradition with respect for others, sometimes leading to the rediscovery of neglected traits of one's religious heritage. *Integration*, finally, aims at envisaging a common core underlying all religions. In the case of the interaction between science and religion, Barbour clearly favors integration but stops with pluralistic dialogue, remaining skeptical toward the possibility of finding an essential, common feature in the world's religions (Barbour 2002, 355–9).

In adopting Barbour's typologies for the present analysis, I clearly accept its validity as well as Barbour's self-defense. It should be noted that the authors examined here explicitly seek to articulate a specific way of relating science and religion, therefore engaging in a philosophical enterprise analogous to Barbour's own, whereas Cantor and Kenny's objections are aimed at discrediting the usage of Barbour's concepts in the context of critical and historical reconstructions. Thus it is helpful to compare Barbour's typologies with the work of those engaged in a similar endeavor: the validity of Barbourian categories to understand noncontemporary debates is irrelevant here. However, Cantor and Kenny's critique must be reckoned with, since it can help us to refine our reconstruction and critical reading of both Barbour's model and of those compared with it. Especially useful is their observation concerning the protean nature of the terms *science* and *religion*, which I adopt as a *caveat*. *Science* can of course mean a great number of things, depending on language, historical period and context. First, where not otherwise specified, I use the term "science(s)" as shorthand for "natural science(s)." Second, the present discussion is based on the various authors' own use of the word in English, as it appears in their works. I am well aware that this is somewhat problematic, particularly when texts have been translated. The exegetical move I adopt is the following: instead of starting off with a more detailed definition of "natural science" and trying to see whether a specific author conforms to it, I simply allow the specific meaning to emerge from the author's analysis. I treat the term

religion similarly: unless otherwise specified, it serves as a synonym of *Islam*. I rework it within each specific analysis by pointing to the concepts each author associates with it. In other words, instead of using Cantor and Kenny's observation to justify distrust toward any model that makes use of the two terms, I take it as a reminder that, beyond explicit definitions and programmatic claims, in order to reconstruct and deconstruct an author's interpretation of *science* and religion one has to take into account the author's overall characterization of the terms as they emerge from concrete examples and conceptual associations.

I also accept Cantor and Kenny's objection to Barbour model's one-dimensionality, since it is focused on ideas rather than concrete institutions and power relationships. The authors I investigate are themselves involved in a discourse that is embedded in a specific socio-political context. The present reconstruction is only a philosophical contribution, which can be in turn integrated into further analyses conducted in sociological, political, and perhaps even psychological terms. These lines of inquiry will not be pursued here at length. I also take Cantor and Kenny's objection as an indication that, in the critical reconstruction of the theoretical models under examination, we must take into account the socio-political dimension of religion and science by asking whether and how the authors examined display any awareness of it. Finally, I argue that confronting Barbour's typology with a similar Muslim discourse is a scholarly exercise perfectly in tune both with the observations by Cantor and Kenny and by Barbour regarding the supposed bias toward Christianity.³

ISMAIL RAJI AL-FARUQI

US-based Palestinian scholar I. R. al-Faruqi (1921–1986) fuses political, religious, and epistemological concepts in an original synthesis. al-Faruqi's initial concern is political: he is appalled at the state of the Muslim community, or *ummah*, which, despite its dimensions and material resources, he sees as in a state of unhappiness and fragmentation (al-Faruqi 1995, xiii). The root of such fragmentation is traced by al-Faruqi to an intellectual disease: genuine Islamic thought has been infected by destructive Western principles, transmitted either by direct contact with the West or by attempts at reforming Islam carried out with good intentions but bad results by Muslim reformers (al-Faruqi 1995, xiii–xiv). Among those principles, al-Faruqi particularly blames nationalism, a “despicable Western virus” (al-Faruqi 1995, xiv), and skepticism, for whose spread al-Faruqi partly inculcates “. . . the success of science which is seen as the continuing victory of the empirical, over the religious, mind” (al-Faruqi 1995, 39). The cure for this state is, for al-Faruqi, a return to genuine Islamic principles. al-Faruqi envisages in the Christian concept of faith “. . . an implication of untruth, of probability, of doubt and suspicion”

(al-Faruqi 1995, 40), and he opposes to it the principle of *iman*, belief in the truth, described as a category that is both cognitive and ethical (al-Faruqi 1995, 42). Equally cognitive and ethical in al-Faruqi's thought is the concept of *tawhid*,⁴ the unity and unicity of God, recognized as the truth. *Tawhid*, in al-Faruqi's view, is pivotal, for without it "... there would be no Islam" (al-Faruqi 1995, 19).

Tawhid, for al-Faruqi, means the opposite of skepticism (al-Faruqi 1995, 42), and its acknowledgment is the panacea for the *ummah's* diseases. Recognizing that God is the one and only source of all phenomena entails believing that these are regular and universal. This, according to al-Faruqi, is a prescription for "optimism" on an epistemological level that motivates and guides the investigation of nature (al-Faruqi 1995, 45–6). al-Faruqi also holds that *tawhid* means separating nature from superstition (al-Faruqi 1995, 52). He describes recognition of God as "Islam's highest rationality" (al-Faruqi 1995, 71). In nature, which al-Faruqi describes as "God's manor," only reliable, orderly, meaningful and fully graspable patterns are recognized (al-Faruqi 1995, 49–59). "God is the necessary condition of natural science" (al-Faruqi 1995, 53) and the acknowledgment that the world, described by al-Faruqi as a cosmos opposed to chaos (al-Faruqi 1995, 12 and 55), belongs to God and is only entrusted to man, promotes responsible exploitation of its resources (al-Faruqi 1995, 57–59).

Analogously, *tawhid* is, for al-Faruqi, the opposite of division and divisiveness on the ethical level. al-Faruqi advocates the (re)establishment of a *pax Islamica*, based on the elimination of particularisms. On the one hand, he stresses that in the past *pax Islamica* did not mean conversion to Islam but peaceful relationships between religions by virtue of the recognition of God's supremacy (al-Faruqi 1995, 9). On the other hand, al-Faruqi emphasizes that the *ummah* should be monolithic (al-Faruqi 1995, 117), and that Islam cannot be "particularist"; it is, indeed, "universalist" and "totalist," meaning that "Islam is relevant to every era of human activity" (al-Faruqi 1995, 109) and it cannot "... rest until it has included all mankind" (al-Faruqi 1995, 96). Particularism, according to al-Faruqi, has to be "fought" (al-Faruqi 1995, 106). Allowing religious-moral diversity within the *ummah* to al-Faruqi constitutes a renunciation of *tawhid* that amounts to "heresy" (al-Faruqi 1995, 117): "Islam is definitely against pluralism of ultimate truth, not of opinions about the truth. It demands that opinions be responsible" (al-Faruqi 1995, 117).

The return to the aforementioned epistemological principles constitutes, in al-Faruqi's thought, an *Islamization of science* that is regarded as the preliminary and most important stage in the regeneration of the Muslim community, a step not to be neglected because of other apparently more important or urgent problems in Muslim societies. It is the starting point and the backbone of a more general process of Islamization, aimed at restoring the centrality of Islam on all the fields of life. al-Faruqi also outlines practical measures to support this process: action should be taken by a group

of intellectuals conscious of the problem and eager to spread awareness of; links should be established to Muslim universities; new members should be encouraged among students and religious scholars; and scholars should be trained in the Islamic vision on a post doctoral level. Moreover, the reformulation of epistemology according to Islamic ideas should pertain not only to basic and central concepts, but it should also be extended to the founding and guiding principles of specific disciplines, pure and applied, human and natural alike.⁵ As early as they were stated at the beginning of the 1980s, the principles and the ideas of the Islamization of science found a considerable number of adherents among Muslim intellectuals. Such views (and detailed plans for their implementation) were explicated and discussed in numerous conferences and workshops. al-Faruqi, who had a strong practical penchant, not only devised theoretical plans meant to guide such Islamization of science (see al-Faruqi 1989) but also promoted its implementation in practice by founding the IIIT, Islamic Institute of Islamic Thought, in Virginia in 1981.⁶ The various and variously interconnected ideas concerning the Islamization of science survive in the contemporary debate on Islam and science, as do the institutions, activities and publications originally inspired by them.

SEYYED HOSSEIN NASR

The entire philosophical reflection of the Persian-American scholar S. H. Nasr (b. 1933) rests on a pivotal contraposition between what Nasr describes as *sacred science* and modern science (cf. Stenberg 1996a and 1996b). Human beings, according to Nasr, are endowed with a “supernaturally natural function,” which he calls intelligence or Intellect (Nasr 1981, 5). Through intellect it is possible to know the Absolute (Nasr 1981, 2). Knowing the Absolute means knowing the existence of superior spiritual levels, the interrelatedness of the phenomena of nature, the interrelatedness of their respective elements, and most importantly, the derivation of everything from the Absolute. According to Nasr the awareness of the importance of the intellect has been lost, together with the awareness of the Absolute itself. In Nasr’s reconstruction the oblivion of the Absolute characterizes the whole course of human thought marked, in its dominant manifestations, by a continuous desacralization of knowledge. He points to three important historical stages of such desacralization: ancient Greek philosophical schools based on rationalism and skepticism “. . . reduced knowledge to either ratiocination or simple mental acrobatics” (Nasr 1981, 34); Renaissance thinkers favored a concept of nature as independent and self-creative (Nasr 1996, 100–13); Descartes reduced knowledge to individual reason and definitely divorced mind and matter, while identifying nature with the physical world and the study of the latter with the study of its mathematical order (Nasr 1981, 41 and 1996, 102–3).

In Nasr's interpretation, the contemporary sciences of nature are characterized by the oblivion of intellect and are therefore severed from Divinity and highly compartmentalized; the implementation of their fruits—namely, technology—brings about the environmental crisis that characterizes modernity (Nasr and Iqbal 2007, 119–48). What "... parades as human progress" is in fact "mass suicide" (Nasr and Iqbal 2007, 203). In Nasr's view, rediscovering the spirit entails curing the "spiritual malaise" of the West and solving the environmental crisis (Nasr 1993, 145). Modern Western science has, according to Nasr, "... a demonic aspect to it which destroys much of the spiritual ambience, both inward and outward, of the human being" (Nasr and Iqbal 2007, 55 and 76). Nasr holds that contemporary cosmology is purely physical and therefore not to be taken seriously. He regards indeed the plurality and changes of cosmological theories as a sign of weakness of cosmology itself (Nasr and Iqbal 2007, 85). Further, Nasr is especially critical of the theory of evolution, which he describes as the "tent-peg of modernism ... kept as an ideology," aimed at reducing man to matter and excluding divinity and teleology from nature (Nasr 1993, 156). According to Nasr, it "... requires more faith than is claimed by any religion for its founder or even for God" (Nasr and Iqbal 2007, 167; see also the entire Chapter 6). He regards attempts at reconciling it with religious concepts, such as Teilhard de Chardin's theories, as a "surrender" of theology "... to the microscope" (Nasr 1981, 240), "an idolatry" (Nasr 1981, 241).

Contrasted with desacralized, fragmentary and compartmentalized science is *scientia sacra*. Nasr's lifelong scholarship is characterized by a continual attempt to illuminate all those philosophical contributions that, over the centuries, contributed to keeping alive the consciousness of the sacred in accordance to a teaching that Nasr calls *philosophia perennis*. Thus reading Nasr's works is like reading a counter-history of philosophy aimed at illuminating the survival of *philosophia perennis* within (or despite) more academically successful doctrines.⁷ One repository of such awareness is of course world religions, substantiated by successive revelations. Among all religions, in Nasr's interpretation, Islam enjoys a special status. In order to argue this point, Nasr emphasizes that Islam is "... the last of the major religions of the present cycle of humanity" (Nasr 1993, 103) that confirms and seals the previous revelations. It was by virtue of the recognition of the common source that Muslim thinkers could engage in debates with the philosophers and theologians of Judaism and Christianity (Nasr 2010, 138). Nasr stresses the importance of *tawhid*: Islam can help to rediscover "... the plenary doctrine of the nature of God as reality" because of the doctrine of divine Unity (Nasr 1993, 12). Nasr equates *tawhid* to "oneness," "making one," "integration" (Nasr 2010, 246); the Islamic testimony of faith "There is no divinity but the Divine" (as Nasr translates it) is interpreted as "a statement concerning knowledge, not

sentiments or the will” (Nasr 1981, 11). In Nasr’s words, “It contains the quintessence of metaphysical knowledge concerning the Principle and its manifestation” (Nasr 1981, 11). Nasr points out that mainstream Christian thought, in order to differentiate itself from the “cosmolatry” that characterized the Greek doctrines it was competing with, “. . . drew an excessively tight boundary between the supernatural and the natural, leading to an impoverished view of nature” (Nasr 1981, 35). This is strongly contrasted with Islam, in which, according to Nasr, “. . . knowledge was never divorced from the sacred” (Nasr 2010, 131).

Islamic education, Nasr emphasizes, revolves around the Qur’an, which contains the roots of all knowledge (Nasr 2010, 130–1). “The Qur’an,” Nasr holds, “addresses the whole of the cosmos” and “. . . does not draw a clear demarcation between the natural and the supernatural” (Nasr 1993, 130). Islam, Nasr maintains, is rational, aware of the sacred value of nature and concerned with humans without being “rationalistic,” “naturalistic” or “humanistic” in the negative sense that Nasr assigns to such terms, denoting philosophies too centered, respectively, on reason, nature and man to the detriment of the divine (Nasr 1993, 137). Nasr, unlike al-Faruqi, does not formulate a detailed plan for an Islamization of science; he does, however, speak of an *Islamic science* in contrast with Western science. Nasr namely points to the possibility of integrating the Western sciences “. . . into an Islamic perspective” (Nasr and Iqbal 2007, 79), which should first and foremost correct the destructive impact of technology. For instance, humans must be reminded that they do not own the earth but that it has been entrusted to them by divinity (Nasr 1993, 129–45; Nasr and Iqbal 2007, 98). To complete this short reconstruction of Nasr’s thought, it is important to point out also that, in his interpretation of *tawhid*, looking at other world religions through the lenses of Islam shows that the doctrine of unity and unicity of God lies at their heart as well.⁸

MEHDI GOLSHANI

The Iranian scholar M. Golshani (b. 1939) complements his competence in the field of physics with a philosophical background encompassing Western and Muslim thought and emphasizing Shi’ite sources. His works stand out, first and foremost, as a plea for metaphysics against the conviction that science is self-sufficient. In a short monograph in which the Qur’an is never mentioned (Golshani 1997), the Iranian physicist reconstructs and rejects the reasons why natural scientists have dismissed philosophical speculations. Such a dismissal, according to Golshani, “. . . merely replaces an explicit philosophy with an uncontrolled and naive philosophical outlook” (Golshani 1997, vii and 75). According to Golshani, science cannot be separated from metaphysics; science relies constantly on concepts not derived from experience and is based on principles that are not

dictated by the facts that science studies. This is clearly demonstrated, according to Golshani, by the disagreement of scientists over time, or on a specific matter in the same epoch (Golshani 1997, 23–39). Hence, “science and metaphysics are complementary rather than contradictory” (Golshani 1997, 75). In light of such considerations, the idea that philosophy is irrelevant for physics is illusory; even the rejection of philosophy is philosophically argued. Such rejection is also *bad* philosophy: a maimed understanding of science, Golshani argues, has an impact on science itself, resulting not only in a theoretically impoverished approach to nature, but also in an unleashed, destructive use of science itself (Golshani 2005, 102). Golshani’s complementary argumentative strategy is to locate a metaphysics for science in the Qur’an.

Golshani points out that the Qur’an emphasizes knowledge (Golshani 2003, 18; Golshani 2005, 77–80) and that it refers to the phenomena of nature and their study, which can be pursued as an act of worship (Golshani 2005, 80–2). In the Qur’an Golshani finds concepts related to what he sees as a sound philosophy of science: (i) emphasis on sensory knowledge, but also (ii) on the necessity of transcending it through intellect (Golshani 2003, 185–200), (iii) belief in unchangeable patterns underlying natural phenomena that helps the systematization of knowledge, and (iv) the principle of general causality (Golshani 2003, 292–317). While belief in such principles rightly guides science, belief in a purposeful and God-dependent universe prevents a destructive use of technology (Golshani 2005, 102). Golshani recognizes the existence of “inspiration” and “enlightenment” as a means for knowing the divine, but he does not incorporate them in the process through which knowledge is pursued, since they are only bestowed on saints (Golshani 2004a, 39–41).

The harmony between Islam and science is proved by the existence of outstanding Muslim intellectuals in the past (Golshani 2005, 80–2). In light of such harmony, the present state of science and technology in the Muslim world, which Golshani sees as in decline, appears inexcusable (Golshani 2003, 50–5). It is possible, according to Golshani, to speak soundly of an “Islamic science.” This should not be identified, in Golshani’s opinion, with the research of specific scientific notions in the Qur’an, since the latter is a book of guidance, and since the truth of its statements should not be anchored to “changeable theories” (Golshani 2003, 146–7). Golshani here refers to two long-lasting, widely intertwined and still thriving exegetical trends: the “scientific interpretation” of the Qur’an and the identification of “scientific miracles” in the Qur’an itself. According to authors who have embraced and nourished such approaches, innumerable expressions of which can be found on the Internet and in popular publications, the Qur’an contains precise reference to natural phenomena or even anticipations of scientific discoveries and inventions, which are in turn offered as proof of the Qur’an’s divine origin (see Dallal 2002 and Wielandt 2002).

Neither is an “Islamic science,” according to Golshani, merely the Western version recast according to Qur’anic principles. Rather, an “Islamic science” is one whose metaphysical presuppositions are rooted in, and oriented by, the Qur’anic worldview (Golshani 2003, 51–2; Golshani 2005 *passim*). Golshani hints at the possibility of harmonizing with such a worldview even the Darwinian theory of evolution, if the latter is given a theistic rather than an atheistic reading (Golshani 2004a, 60–4 and 2005, 91–2). Golshani also accepts miracles, interpreted as phenomena involving laws that are not yet known (Golshani 2003, 302–10).

In Golshani’s interpretation, the Qur’anic concept of *tawhid* is given a fundamental role: he argues, “The idea of the oneness of God is the most basic concept in Islam. It implies the unity of the creation, the interrelatedness of all parts of the world. This, in turn, implies the unity of knowledge” (Golshani 2005, 82). While he does not develop this concept as extensively as the others he reworks, Golshani shifts from the idea of a harmony between science and Islam to the idea of a harmony between science and monotheistic creeds. Golshani criticizes the “alleged inconsistency of science and religion” (Golshani 2004a, 10) and suggests indeed that the characteristics of the Islamic worldview “. . . are more or less present in the other two Abrahamic religions (Judaism and Christianity) as well, and that they could be taken as general characterization of a ‘theistic science’” (Golshani 2004a, 51). We should also recall that Golshani has *de facto* encouraged and personally engaged in interreligious dialogue on the mutual relevance of religion, science, and philosophy (Golshani 2004b).

NIDHAL GUESSOUM

The Algerian astrophysicist N. Guessoum (b. 1960) is particularly engaged in the application of astronomy to the determination of Islamic holy occasions.⁹ He recently established himself as one of the best-informed contributors to the debate on Islam and science through his overarching monograph that serves as an overview of the debate itself (Guessoum 2011). Guessoum’s overall purpose is, in his own words, to “. . . reconcile religious tradition with rational and scientific modernity, and how to be dual (quantum) without being schizophrenic” (Guessoum 2011, xxvi). In Guessoum’s reconstruction, the existence of great Muslim intellectual figures and the flourishing of science in the past is a relevant precedent with a didactic function for the present. In particular, Guessoum assumes Ibn Rushd (1126–1198) as his “. . . guiding spirit in contemporary science and religion discourses” (Guessoum 2011, xxi). In Guessoum’s own interpretation of Ibn Rushd’s thought, the thinker of Córdoba “. . . showed that it was possible to unite reason with the core tenets of Islamic faith” (Guessoum 2011, xxi). Guessoum contrasts the past greatness and harmonious relationship between Islam and science with the present condition. On the practical side, Guessoum observes that scientific culture

is insufficiently appreciated and encouraged (Guessoum 2010, 219–20 and Guessoum 2011, 7–8). When it comes to the dominant theoretical discourses, Guessoum sees the contemporary landscape as dominated by misguided and misleading conceptions.

One of the main targets of Guessoum's polemic is the aforementioned interpretations of the Qur'an aimed at reading it as a catalogue of "scientific notions" or at identifying scientific discoveries supposedly anticipated in the revelation. Guessoum recognizes that he was impressed by such exegetical trends in his youth (Guessoum 2011, xxiv) and acknowledges that the intentions of the authors who embark on such an enterprise are sincere. However, he dismisses the search for "scientific notions" in the Qur'an as a vehicle of pseudoscience and of a misunderstanding of scientific methods (Guessoum 2008 *passim* and Guessoum 2011, 141–72). Guessoum recognizes that the Qur'an makes reference to knowledge and to natural phenomena, but he rejects all "extreme positions" regarding the interpretation of such verses. Guessoum rather identifies the miraculous character of the Qur'an as its openness to new, multi layered interpretations (Guessoum 2011, 174). According to Guessoum's conception, science, properly understood, should always be given priority in reading the Qur'an. This does not mean that science has to be found in the Qur'an itself, nor that scientific knowledge is the only tool through which it should be interpreted. But on crucial issues such as creation and evolution, science itself should be fully accepted (Guessoum 2011, Chapters 6 and 9).

Moreover, science has to be grasped in its mathematical aspect and its falsifiability (Guessoum 2011, 175). Guessoum opposes equally Nasr's approach, al-Faruqi's Islamization of knowledge, and the idea of a neutral, value-free science. Guessoum holds that Nasr's praise of a qualitative, rather than quantitative, knowledge relies on vague principles; intuition of the divine, even if it is given credibility, should not enter into the process of scientific knowledge. Science is already there and needs neither supplementary conceptual infusions nor a new foundation. At the same time, the existence of theoretical guiding principles that transcend facts and guide investigation works against any metaphysically deflationist view of science itself (Guessoum 2011, 110–39).

Guessoum also sees the principle of *tawhid* as central for understanding the relationship between Islam and science. Nevertheless Guessoum does not extensively elaborate it, only stating its importance while discussing other authors (see, for instance, Guessoum 2011, 60). In the same work, the issue of other monotheisms is not addressed extensively either. However, Guessoum does not seem to adopt an exclusivist approach, according to which Islam is the one and only religion that can be reconciled with science. Indeed, he states, "This [the investigation of the harmony between scientific cosmology and religious concepts] can apply to any and all religious traditions; here I only take the Islamic tradition because it is

my own, and I feel the need to draw attention to its rich areas as well as to some of the misguided ventures performed under its title” (Guessoum 2011, 216).

WHICH INTEGRATION?

It is time to compare the four positions so far recounted with Barbour’s typologies and to read them in the light of Cantor and Kenny’s suggestions. The four positions I have reconstructed clearly lend themselves to numerous analyses: for instance, questions can be posed regarding their sources, their scholarly and popular impact, the consistency with which they are actually carried out by their respective advocates, and so forth. Here I will rather focus on three interrelated questions: (i) How useful are Barbour’s typologies in charting [charting] the four positions? (ii) To what extent do the four positions encounter the problems identified by Cantor and Kenny in their objections to Barbour? (iii) Which features of the four positions, if any, can be said to transcend Barbour’s model and be inherently Qur’anic?

As we have seen, in at least one passage Nasr uses the expression “to integrate” while referring to his approach (see also Nasr 1981, 213–4); moreover, he even proposes “integration” as a translation of *tawhid* (for example, Nasr 2010, 244). The physicist Taner Edis, who has produced a systematic refutation of the whole debate on the harmony of Islam and science (Edis 2007) encompassing the ideas of Nasr, the plans for the Islamization of science, as well as the “scientific interpretation” of the Qur’an writes, “[Barbour] discusses four broad models of how science and religion can relate to one another: . . . devout Muslims mainly prefer to seek integration” (Edis 2007, 26). The scholar Zainal Abidin Bagir, who has produced a survey of Muslim responses to science (Bagir 2005) encompassing Golshani, Nasr, some proponents of an “Islamised” science and Muslim creationists, states, “In the Muslim world, the notion of integration—formulated in different ways, including the one close to Barbour’s—has also been popular” (Bagir 2005, 37). He then criticizes some specific contributions, arguing, for example, that Nasr has been “too quick” in seeing evolution as necessarily implying the nonexistence of God, whereas it is “metaphysically ambiguous” (Bagir 2005, 49). That being said, “integrate” and “integration” remain the terms by which Bagir carries out his analysis and also through which he defines his own suggestions for shaping the relationship of Islam and science, including a recommendation to develop the ethical dimensions of science and of ecology (Bagir 2005, 58–9).

The cases of Edis and Bagir, who approach the debate on Islam and science from very different perspectives, demonstrate that the term *integration* is considered a useful label in order to refer to the debate on Islam

and science as a whole, even while explicitly taking into account Barbour's conceptualization. This impression can be reinforced by the fact that some authors, like Nasr, use the very term. Nevertheless, this relies on a very broad conception or definition of "integration" as a *thematic combination* of Islam and science. In this sense, each and every work, which takes up the issue of Islam and science, reconceptualizes some religious ideas vis-à-vis scientific ones, or criticizes science from the standpoint of Islam, is an expression of "integration." I would like to emphasize, however, that such a broad usage of *integration* turns out to be useless: if we adopt it, we are not provided with a fine enough brush to paint the contemporary landscape, especially as it is represented by the four authors considered here. In that sense they would all be considered advocates of integration, and the category would hold valid even for the authors who devote themselves to the "scientific exegesis" of the Qur'an. It can be instead suggested that *precisely because "integration" has been defined by Barbour in his taxonomy, and precisely because Barbour's taxonomy has become so influential, the term should be avoided while referring to the debate as a whole.* Sticking to the term *integration* in such a broad interpretation renders no service to the authors involved in the debate or to Barbour's theory. The first concept of *integration* identified in the present analysis is then what might be called *generic, non-Barbourian integration*. It may prove appealing to scholars engaged in studying Islam as a cultural phenomenon,¹⁰ or it can be adopted for self-reference by authors involved in the debate who are eager to use a catchy term, but it clearly has no philosophical usefulness. We can discard it as too blunt a category.

The next question then is whether *Barbourian* integration can be detected at all in the debate on Islam as science, especially as it is represented by the four authors analyzed here, and, conversely, if any of the other of Barbour's categories appropriately describes them. Bagir is surely right when he states "It is difficult to find [in the debate on Islam and science] something like a conflict view in Barbour's typology" (Bagir 2005, 41). Indeed, none of the authors analyzed seems eager to couch his discussion in terms of conflict. Absence of term does not imply absence of conflictual attitudes, however. Let us focus on the first two authors. If we examine their treatment of science and Islam, we clearly see that al-Faruqi and Nasr decisively hold *oppositional stances* toward scientific methods in general and toward evolution in particular. Science, they maintain, should be reformed, and part and parcel of such correction is the rejection of evolution. Their doctrines are thus *corrective*. This can be seen as an expression of conflict, of a kind perhaps not fully graspable through Barbourian categories, since the two authors are neither literalist nor, of course, scientific. We then observe the first shortcoming of Barbour's model, one that can be interpreted, in line with Barbour's own suggestions, as a consequence of the fact that it was modeled on specific debates within Christianity.

Golshani and Guessoum accept contemporary science *as it is*, recognizing its autonomy, and including evolution. Thus we might be tempted to recognize Barbourian integration in their theories. But let us inspect the three possible options encompassed by Barbour's definition of the very term: *natural theology* (the inference of the existence of God from the design in nature), *theology of nature* (the modification of the theology of creation in the light of scientific cosmological theories), and a *systematic synthesis of the former and the latter*. Can we confidently state that Golshani's and Guessoum's approaches are fully devoted to, or express, any of these three options? Indeed, Golshani's and Guessoum's works make reference to the order of natural phenomena as interpretable as signs of the existence of God. Moreover, they point at the necessity of developing accounts of the origin of the universe that respect the results of contemporary cosmology. Nevertheless, if "integration" means a full-blown development of the options listed by Barbour under such a label, using the term to describe the theories of Golshani and Guessoum seems premature to say the least. It would be more cautious to state that they are engaged in an *accommodation* of science and Islam, where (a) science is accepted in its entirety and deemed in no need of methodological reform; (b) some specifically Qur'anic concepts, first and foremost *tauhid*, are said to be *consistent* with scientific ones; and (c) evolution, fully accepted as scientific, is said to tolerate a theistic interpretation. All these elements do not authorize a detection of Barbour's integration in a full sense. A possible way to define this approach is rather "harmony," given that the term is narrowed down and sanitized from, for instance, Edis's generalized and negative connotation. The name to be given to their approach can be further debated. What can be pointed out here is that Golshani and Guessoum's role in the debate on Islam and science is that of reformers of the debate itself; what we learn from them is first and foremost what the debate is *not* about. What then seems pivotal, both in marking the distance from previous contributions and in defining the shape of debates to come, is the assertion that evolution can be theistically interpreted. Golshani, as we have seen, points at this idea, whereas Guessoum rather summarizes various defenses of theistic evolution emerged in Muslim and non-Muslim circles alike (Guessoum 2011, Chapter 9). Famously, evolution is presented by other authors as both solidly scientific and inevitably atheistic, to wit, not just *indifferent* to the concept of divinity but rather *corrosive* of it. Daniel Dennett speaks of evolutionary concepts as a "universal acid" for religious ones (Dennett 1995). Thus the feasibility both of Golshani's and Guessoum's accommodations (and of distinctively Barbourian integration) is entirely dependent on the outcome of the debate on what, within evolution, is *fact* and what is *interpretation*. In this sense, Golshani's and Guessoum's accommodations so far look rather like a transient option,

a temporary ceasefire during which the field of a new confrontation is defined. Interestingly enough, in such a confrontation Muslim authors can join forces with theistic thinkers of other creeds.

Let us further inspect the four positions in the light of Cantor and Kenny's objections to Barbour. The first one concerns the monolithic character of, respectively, science and religion. The issue now at stake is whether the authors under examination construct their theories by recalling monolithic or diversified, dynamic views of the two. What is discussed to a certain extent is the fluid character of *science*. Here we discern a spectrum of attitudes. Nasr, as we have seen, regards change (especially in cosmological doctrines) as a sign of weakness. Golshani recalls scientific change both as a move in his plea for metaphysics and a *caveat* against the scientific interpretation of the Qur'an. Guessoum, finally, fully accepts change as essential for the definition of science itself. Thus at least these three authors cannot be said to treat science as monolithic; on the contrary, a notion of science's fluidity is part and parcel of their respective theories.

Cantor and Kenny also point out that the analysis of science and religion entails a discussion of institutional and political factors. As I have mentioned above, further scholarly work might tell us whether the positions endorsed by the authors examined here mirror conflicts among institutions, and/or whether their works and initiatives have any impact on the behaviors and institutions they reflect upon. In this textual analysis, we can confirm that the discourse carried out by the two authors does entail extensive reference to the status of science and technology as they perceive them and with the way they would like to shape them. Notwithstanding their sometimes irreconcilable stances, all the authors examined are concerned with a concrete state of science and technology in ways they are used globally in the Muslim world. All these authors, in one way or another, perceive a tension between an actual state and one to be reached.

Let us finally take into account the concept of integration between religions. The discussion here will be limited to monotheistic religions. Once again, we see that some of Barbour's ideas seem to be disconfirmed. Let us start by investigating how we can describe the four authors' attitudes through Barbour's typology. Independence, given the fact that all the authors analyzed here are believers, is not an option. As for conflict, it is not explicitly evoked, while dialogue seems to be practically advocated. al-Faruqi, in particular, endorsed a "trialogue" among the three main monotheisms (al-Faruqi 1986). But if the work taken here accurately represents his position, one can perceive a tension between advocacy of dialogue and the reference to Islam's "totalist" vocation.¹¹ Therefore, for al-Faruqi, conflict can be said to be a stone guest. Nasr envisages a common core in all religions, but also presents *Islam* as providing the vision through which this commonality can be best detected; this might be described as a latently conflictual position. In Golshani and Guessoum we find not

only occasional reference to the idea that *tawhid* lies at the heart of other monotheisms, but also a clear *de facto* alliance with authors belonging to other creeds, without any hint at the necessity of reading their contributions through Islam. Other monotheisms are progressively treated on a par; at the same time, the idea that Islam is the privileged outlook through which a common core to monotheisms can be detected seems to be fading away. In these cases, *integration à la Barbour* appears more viable than what Barbour himself suspected.

It is time to summarize the observations drawn so far. I have focused on three concepts of “integration.” The first one is generic integration between religion and science; as the rich spectrum represented in the debate on Islam and science demonstrates, despite being a catchy term, it is insufficient as a critical tool. The second concept is Barbourian integration of science and religion; as we have seen, none of the contributions to Islam and science reconstructed here seems to represent it. The third concept is Barbourian integration between religions, and I have pointed out that the debate seems to move in this direction. We can conclude that Barbour’s taxonomy of possible interrelations between religion and science appears inadequate. The taxonomy of possible interrelations between religions appears useful, but Barbour’s pessimism regarding the feasibility of integration can be sidestepped. The Qur’anic concept of *tawhid*, in particular, provides a strong connection both between science and religion and between Islam and other religions, in a way that would be unimaginable if we were to confine ourselves only to Barbour’s theory. This confirms Barbour’s own intuition that his discussion was indeed too focused on specific debates emerged within Christianity.

ACKNOWLEDGMENTS

I am very grateful to two anonymous reviewers who have helped me to find the right track. This paper stems from a talk given in Lund, at the Center for Middle Eastern Studies, during the seminar on Islam and Modern Science held on October 12, 2011 within the research program MECW. I am deeply indebted to all its participants for the fruitful exchange of ideas: Leif Stenberg, Reza Arjmand, Anne Ross Solberg, Rainer Brömer, and Martin Riexinger. I am indebted to Christa Salamandra, who gently bestowed order on many of my paragraphs. I heartily thank Darcy Thompson, not only for her patient proofreading, but first and foremost for the constant motivational support, especially during weekend work sessions. These pages are dedicated to Maria Carla Galavotti.

NOTES

1. Evans and Evans (2008) similarly criticize the concept of conflict, deemed misleading, and focus on other factors that shape and orient science and religion.

2. McGrath (2010), after taking into account criticisms moved at Barbour's typology, accepts it as a "useful sketch of the terrain" (McGrath 2010, 50).
3. Reference to Islam in Barbour's mentioned critics is neither extensive nor meticulous in Cantor and Kenny 2000, Evans and Evans 2008 (95–6), or finally, Barbour (2002, 354).
4. From now on I will employ the simplified transcription *tawhid*, even in direct quotations where an alternative and/or more accurate one is adopted by the author under examination.
5. See, for instance the various contributions contained in *Islam: Source and Purpose of Knowledge. Proceedings and Selected Papers of the Second Conference on Islamization of Knowledge 1402 AH/1982 AC*, 1988, Herndon, VA, IIIT.
6. For a detailed reconstruction of al-Faruqi's initiatives and ideas, as well as those of his followers', see Stenberg 1996a, Chapter.
7. Nasr mainly draws on authors such as Frithjof Schuon, Ananda Kentish Coomaraswamy, Titus Burckhardt, Henry Corbin, René Guénon, and Louis Massignon, who can be characterized as "mystics" and are definitely not a focus of academic syllabi (cf. Stenberg 1996a and Stenberg 1996b, 104–9).
8. "Islam sees the doctrine of unity (*al-tawhid*) not only as the essence of its own message but as the heart of every religion. Revelation for Islam means the assertion of *al-tawhid* and all religions are seen as so many repetitions in different climes and languages of the doctrine of unity. Moreover, whenever the doctrine of unity is to be found, it is to be considered to be of divine origin. Therefore, Muslims did not distinguish between religion and paganism but between those who accepted unity and those who denied or ignored it" (Nasr 1981, 71).
9. See Cartlidge (2011).
10. Stenberg (1996a) adopts instead "Islamization" as an umbrella term.
11. al-Faruqi's contribution to the "Dialogue" that he set up in 1979 (a convention held in New York City and organized by the American Academy of Religion) was actually a lengthy description of the *ummah* and its virtues (al-Faruqi 1986, 47–59).

REFERENCES

- al-Faruqi, Ismail Raji. 1986. *Trialogue of Abrahamic Faiths*. 2nd ed. Herndon, VA: IIIT.
- . 1989. *Islamization of Knowledge. General Principles and Work Plan*. 2nd ed. Herndon, VA: IIIT.
- . 1995. *Al Tawhid. Its Implications for Thought and Life*. 3rd ed. Herndon, VA: IIIT.
- Bagir, Zainal Abidin. 2005. "Islam, Science, and 'Islamic Science': How to 'Integrate' Science and Religion." In *Science and Religion in a Post-colonial World. Interfaith Perspectives*, ed. Z. A. Bagir, 37–61. Adelaide: ATF Press.
- Barbour, Ian G. 2000. *When Science Meets Religion*. San Francisco: HarperSanFrancisco.
- . 2002. "On Typologies for Relating Science and Religion." *Zygon: Journal of Religion and Science* 37:345–59.
- Brooke, John Hedley. 1991. *Science and Religion. Some Historical Perspectives*. Cambridge: Cambridge University Press.
- Cantor, Geoffrey, and Chris Kenny. 2001. "Barbour's Fourfold Way: Problems with His Taxonomy of Science-Religion Relationships." *Zygon: Journal of Religion and Science* 36:765–81.
- Cartlidge, Edwin. 2011. "When Is It Ramadan? An Arab Astronomer Has Answers." *Science* 333:513 (also available at <http://www.sciencemag.org/content/333/6042/513.full>).
- Dallal, Ahmad. 2002. "Science and the Qur'an." In *The Encyclopaedia of the Qur'an*, ed. Jane Dammen McAuliffe, 539–58. Leiden and Boston: Brill.
- Dennett, Daniel C. 1995. *Darwin's Dangerous Idea. Evolution and the Meanings of Life*. New York: Simon & Schuster.
- Edis, Taner. 2007. *An Illusion of Harmony. Science and Religion in Islam*. Amherst, NY: Prometheus Books.
- Evans, John H. and Michael S. Evans. 2008. "Religion and Science: Beyond the Epistemological Conflict Narrative." *Annual Review of Sociology* 34:87–105.
- Golshani, Mehdi 1997. *From Physics to Metaphysics*. Tehran: Institute for Humanities and Cultural Studies.

- . 2003. *The Holy Qur'an and the Sciences of Nature. A Theological Reflection*. New York: Global Scholarly Publications.
- . 2004a. *Issues in Islam and Science*. Tehran: Institute for Humanities and Cultural Studies.
- . 2004b. *Can Science Dispense with Religion?* 3rd ed. Tehran: Institute for Humanities and Cultural Studies.
- . 2005. "Sacred Science vs Secular Science." In *Science and Religion in a Post-colonial World. Interfaith Perspectives*, ed. Zainal Abidin Bagir, 77–102. Adelaide: ATF Press.
- Guessoum, Nidhal. 2008. "The Qur'an, Science, and the (Related) Contemporary Muslim Discourse." *Zygon: Journal of Religion and Science* 43:411–31.
- . 2010. "Conversation with S. Paulson." In *Atoms & Eden. Conversations on Religion and Science*, ed. S. Paulson, 215–28. Oxford: Oxford University Press.
- . 2011. *Islam's Quantum Question. Reconciling Muslim Tradition and Modern Science*. London and New York: I. B. Tauris.
- McGrath, Alister E. 2010. *Science and Religion. A New Introduction*. 2nd ed. Chichester: Wiley-Blackwell.
- Nasr, Seyyed Hossein. 1981. *Knowledge and the Sacred. The Gifford Lectures, 1981*. Edinburgh: Edinburgh University Press.
- . 1993. *The Need for a Sacred Science*. London: Curzon.
- . 1996. *Religion and the Order of Nature. The 1994 Cadbury Lectures at the University of Birmingham*. New York and Oxford: Oxford University Press.
- . 2010. *Islam in the Modern World. Challenged by the West, Threatened by Fundamentalism, Keeping Faith with Tradition*. New York: HarperOne.
- , and Muzaffar Iqbal. 2007. *Islam, Science, Muslims and Technology. Seyyed Hossein Nasr in Conversation with Muzaffar Iqbal*. Sherwood Park, Alberta, Canada: Al-Qalam Publishing.
- Stenberg, Leif. 1996a. *The Islamization of Science. Four Muslim Positions Developing an Islamic Modernity*. Lund: Religionshistoriska avdelningen, Lunds universitet.
- . 1996b. "Seyyed Hossein Nasr and Ziauddin Sardar on Islam and Science: Marginalization or Modernization of a Religious Tradition." *Social Epistemology* 10:273–87.
- Wielandt, Rotraud. 2002. "Exegesis of the Qur'an: Early Modern and Contemporary." In *The Encyclopaedia of the Qur'an*, ed. Jane Dammen McAuliffe, 124–41. Leiden and Boston: Brill.