THE ATOMISTIC CONCEPTION OF NATURE IN ASH'ARITE THEOLOGY

Osman Bakar

Introduction

In Islamic intellectual history, we encounter several conceptions of nature, which differ from each other because they arose out of different perspectives of viewing and understanding nature. The most well-known of these, and also the earliest to have been formulated, was the theory of nature associated with the theologians (mutakallimun) of the Ash'arite school. It has been often referred to as the atomistic conception of nature, since it emphasizes the discontinuous and atomistic character of matter, space, and time, Our aim in this chapter is to provide an introductory discussion of several important features of this connection, including its treatment of the problem of causality and the related question of the meaning of "laws of nature."

General Remarks on Atomism

The idea of atomism had a long history in both Eastern and Western thought.[1] Out of the different philosophical and religious molds in which this idea has been conceived throughout that long history, have arisen such a wide variety of its formulations that, content wise, no single definition can adequately express and comprehend them.

From the classical atomic theory of Greek philosophical speculation to fifth-century atomism of Indian religious sects, from the atomism of Kalam in ninth-century Islam to that of the European Renaissance and to the atomic theory of modern science, one fundamental idea, and the only one, that has remained common to all these theories is the idea of the finitude of the divisibility of particles constituting the matarial world. This is assuming

[1] For the history of atomism, see L.L. Whyte, Essay on Atomism - From Democritus to 1960 (London, 1961); also J.M. Baldwin, ed., Disctionary of Philosophy and Psychology (New York, 1940), Vol. 1.

that those variants which convey the idea of the divisibility of substance ad infinitum are excluded. Otherwise, they have nothing in common, save the claim by each of them that it is the explanation of the nature and reality of the physical world.

Of course, one finds certain interesting similarities, between some of them, as, for example, between Indian atomism and the atomic theory of Kalam, or even between the latter and the atomic theory of modern quantum physics. Similarities in the former case have led certain scholars to postulate an Indian influence on Kalam atomism,[2] in addition to an Epicurean origin for some of its ideas. However, neither of these claims has yet been conclusively established by modern scholarship. Similarities between kalam atomism and modern quantum physics have gained the attention of those contemporary historians of science, who are 'primarily interested in discovering the historical roots of modern scientific theories, or in examining in what way these earlier ideas anticipated the modern ones.

Whatever might have been the historical connections between kalam atomism and the various forms of atomism found in other cultures and civilizations, our main interest here is not in 'discussing it as a possible offshoot or as anticipation of one or more of the latter atomisms, but rather as an independent, integral philosophy of nature, which issues forth directly from the Islamic Revelation. More to the point, we are interested in understanding the atomic theory of kalam as one of several philosophies of nature formulated by Muslims.

The atomistic philosophy of nature is Islamic insofar as it has a Quranic basis. But it is only and not the philosophy of nature in Islam, because it is based not upon the whole teachings of the Quran concerning nature, but rather upon a specific theological perspective contained in that revealed Book. There are other theological perspectives in the Quran, which, in fact, have been used by other intellectual schools to serve as the bases for expounding philosophies of nature distinct from that of kalam. This point is worth emphasizing. In essential terms, the debate between kalam and falsafah was not a debate between two world views, one Islamic the other un-Islamic

---

[2] See Majid Fakhry, A History of Islamic Philosophy (New York: Columbia University Press, 1983), pp. 32-34.

or less Islamic. On the contrary, it was a debate between two particular philosophical perspectives which both fulfil the fundamental criteria of Islamicity and which therefore equally qualify to be called Islamic.

Understandably, one may have a personal preference for one particular theological-philosophical perspective over another. One's inclination and choice is influenced by one's intellectual constitution and background and a host of cultural factors. Thus there is the claim that kalam's theological perspective is more in affinity with the psychological make-up of the Arabs who first originated this atomism.[3] This perspective of kalam will be dealt with further in a later section in this chapter

Muslim atomism in historical perspective

The theory of atomism was first developed in Islam by the Mu'tazila theologians during the first half of the third/ninth century. It is possible that the idea of atomism had already been discussed as early as the beginning of the second/eight century, in relation to the fundamental problem of substance (jawhar) and accident (' arad). This possibility is suggested by certain arguments put forward by 'Dirac b. 'Amar, one of the earliest Mu'tazilite theologians, and a contemporary of Wasil b. 'Ata' (d. 131/748), the founder of the Mu'tazilah school. Dirar's arguments appeared to have been directed against the very basis of Kalam's atomic-theory. He was said to be one of the few dissidents of this theory. He rejected the doctrine of the body as consisting of two distinct elements, atoms and accidents, and instead reduced the body to "an aggregate of accidents, which, once constituted, becomes the bearer (or substratum) of other accidents. "[4]

However, it is quite certain that by the middle of the third/ninth century, atomism had become firmly established in the theological circles of Islam as a theory which commended itself as the antithesis of Aristotelianism. According to an account of early kalam atomism, as given by Abu' l-Hasan al-Ash' ari (d.330/941), the founder of the Ash'arite school of

---

[3] S.H. Nasr, "Islamic Conception of Intellectual Life," in P.P. Wiener, ed., Dictionary of the History of Ideas (New York: Charles Scribner's Sons, 1973), Vol. II, p. 642.

[4] Fakhry, Islamic Occasionalism (London: Allen and Unwin, 1958), p. 33; also his op. cit., p. 51

kalam, in his Maqalat al-Islamiyyin, such early ninth-century Mu'tazilite figures as Abu'l-Hudhail al-' Allaf (d. 226/840), al-Iskafi (d.241/855), Mu'mar ibn 'Abbad al-Sulami (d.228/842), Hisham al -Fuwati (a contemporary of Mu' ammar), and 'Abbad ibn Sulayman (d. 250/864) all accepted the atomic theory in one form or another.[5]

This atomism begun by the Mu'tazilite theologians was later refined and extensively developed by the Ash'arite school, especially by Abu Bakr al-Baqillani (d.403/1013) who may be considered its outstanding "philosopher of Nature." After the fourth-tenth century it was the atomism of Ash' arite kalam which flourished in Islam, having as its exponents such famous names as al-Ghazzali and Fakhr al-Din Razi (d.606/1209).[6] It has remained to this day the dominant "philosophy of nature" in Sunni theology.

The science of kalam has its roots in the earliest theological and political debates in the Islamic community concerning such problems as free will and predestination, the question of whether the Quran is created or uncreated, the relation of faith to works, the definition of a believer, and many more.[7] All these issues arose out of specific internal factors and developments then existing within the community, that were both religious and political in nature.[8] These debates led to the emergence, during the first/seventh century, of various sectarian groups with distinct, definable views which distinguished them from the majority of the community, and which thus placed them in the extreme fringes of the community. The most famous of these groups were the Murji'ites, Qadarites, and Khawarij. It was out of these early theological trends and manifestations that the first systematic theological school emerged, namely, the Mu 'tazilah.

If kalam owes its origin to factors that were internal to the Islamic community, its development owes much to external factors. The first major external factor was the theological attacks against the very tenets of Islamic faith, carried out by such religious groups as Jews, Christians, and Manichaeans, as well as the Materialists, who were all intellectually armed

---

[5] Fakhary, Islamic Occasionalism, p. 34.
[6] M.M. Sharif, ed., A History of Muslim Philosophy (Wiesbaden, 1963), vol. I, p. 226.
[7] Fakhry, A History of Islamic Philosophy, pp. 42-44.
[8] ibid., pp. 37-41.

with the tools of Greek logic. Another major factor was the introduction of Greek philosophical ideas into the community through translations of Greek works into Arabic. The challenge to Muslim thought posed by these two factors was already manifest as early as the beginning of the second/eighth century. It added a new dimension to the whole problem of thought, which had to be grappled with by the new born kalam.

The nature of the new challenge is twofold, one methodological, the other doctrinal. At the methodological level the challenge involved finding rational answers to the fundamental problem of relationship between revelation and reason, of which the question of legitimacy of the use of logic or dialectical methods in theological discussions was but just one aspect. At the doctrinal level, the challenge involved the problem of identifying and formulating authentic criteria of orthodoxy or Islam city in the face of conflicting claims to Islamicity.

As in the case of earlier Muslim responses to their internal challenges, there emerged a wide spectrum of reactions and responses from within the Islamic community to its external challenges. Within the Mu'tazilite school itself, which dominated the thological scene from the second/eighth century to the fourth/tenth century, the response underwent a transformation from what was initially simply a rationalization of faith to an adoption of rationalistic tendencies that were inherent in Greek philosophy of the Aristotelian school. Mu'tazilite rationalism was to lead, among other things, to a denial of the reality of Divine Attributes with the consequence that God was viewed more as an abstract philosophical concept than as a Reality who is the fountainhead and basis of revealed religion.[9]

At the other end of the spectrum were the extremists of the literalist tradition, who were wholly opposed to any kind of rationalization of faith.

General remarks on Ash' ante theology

Ash' ante kalam originated as a reaction against these two diametrically opposed schools of thought, a reaction in which it sought to strike a middle course for the community. On the problem of the relationship between

[9] Nasr, op. cit., p. 641.

revelation and reason, al-Ash'ari, succeeded in safeguarding the rights of interpretative intelligence, to use Schuon's words, without minimizing those of Revelation. Similarly, he presented a reconciliation between tashbih (comparison or analogy) and tanzih (abstraction or incomparability) in his conception of the Divinity by giving anthropomorphic qualities to God, while maintaining that these qualities should be abstracted, and were not to be understood in their literal sense. Likewise, as regards human freedom, he defined it in a way which was acceptable from the theological point of view, safeguarding both divine determinations and human responsibility.[10]

In fact, this spirit of "theological reconciliation" runs through most of his other doctrines, and thereby distinguishes him from both the Mu' tazilities and the literal traditionists. In our previous brief reference to the development of Ash' arite atomism, we have mentioned al-Baqillani, a student of al-Ash'ari, as one of the followers of this school most responsible for its refinement and detailed formulation. As regards the other Ash' arite doctrines, apart from al-Baqillani, it was al-Ghazzali and also Fakhr al-Din Razi, who further elaborated on them to produce a more refined rational exposition.

Although the Ash' antes accepted the necessity of rationalization of faith, they were generally opposed to the rational methodology and speculation of the philosophers (falasifah). Undoubtedly, this attitude of theirs was mainly influenced by their desire to preserve the fundamentality and supremacy of revelation over reason. As they saw it, this important principle had been compromised by the philosophers, as a consequence of their rationalistic approach to even metaphysical (spiritual) knowledge.

In one respect, the Ash' rites possessed an independent spirit of intellectual speculation. Unlike the philosophers, they were not bound to any particular school of Greek philosophy. This spirit was productive of some of the severest criticism of Aristotelian physics. Consequently, the Ash' arite were able to develop many original ideas pertaining to the sciences of nature, particularly in the theory of atomism.

---

[10] This whole passage is a paraphrase of Schuon's excellent summary of the Ash' arite theological position contained in his Islam and the Perennial Philosophy (London: World of Islam Festival Publishing Company, 1976).

Ash'arite atomism and conception of nature

Ash' arite atomism was the fruit of the direct application of a particular theological perspective embedded in the Islamic Revelation to the domain of nature. That application involved ideas and concepts drawn from many sources besides the Islamic ones. These "foreign" ideas and concepts were easily integrated into the theological perspective in question.

It is now time to explain what this "particular theological perspective" is all about. As the word "theology" necessarily implies, a theological perspective must be concerned with God. God has many Names, Attributes, and Qualities. The particularity of kalam's theological perspective stems from the fact that out of so many Divine Names and Qualities, it chose to concentrate on just one of them for the purpose of constructing a religious world view. Kalam seeks to depict the unlimitedness of Omnipotence almost to the point of ignoring all other Divine Qualities. The overwhelming motive for God's actions, according to al-Ash-'ari, is "what He wills' and "because He wills."

Applied to God's activity in nature, this perspective gave rise to that important idea known in the West as occasionalism which has been defined as the belief in the exclusive efficacy of God, of whose direct intervention the events in nature are regarded as the overt manifestation or occasion.[11] Occasionalism implies that all things and all events in nature are substantially discontinuous by nature. The world is a domain of seprate, concrete entities which are independent of each other. There is no connection whatsoever between them, save through the Divine Will. If A is connected to B, it is not because it is in their nature to be connected, but rather because God has willed them to be so. Every effect observed in nature is exclusively caused by God. Hence occasionalism also implies a denial of causality in the sense understood by the philosophers and scientists.

Atomism is therefore a direct consequence of this principle of substantial discontinuity of things. Thus Muslim atomism can be said to have its basis in specific theological principles of Islam, which, in its intellectual history, have been mainly identified with the school of kalam. This answers

[11] Fakhry, Islamic Occasionalism, p. 9.

Wolfson's amazement as to how atomism, "a discredited theory which has been rejected by most of the Greek schools of philosophy as well as the Church Fathers, could have found acceptance among the mutakallimun."[12]

Atomism was taken very seriously by the mutakallimun, because it was inseparably linked to their theology, so much so that, in Ash' arite kalam, its doctrinal status was transformed by al-Baqillani and other fellow theologians from being a mere premise in support of specific religious beliefs to being an essential part of the creed. Their interest in atoms and accidents was not scientific but theological. This was to "vindicate the absolute power of God and to ascribe to His direct intervention not only the coming of things into being, but also their persistence in being from one instant to another."[13] If it happened that certain elements of foreign atomisms fitted nicely into their theological framework, it was well and fine. Otherwise, those atomisms in themselves were of little or no interest to them.

How did the Ash' antes justify, religiously speaking, their rational speculation into the "metaphysics of atoms and accidents" as well as the particular atomistic doctrines which they had adopted? In his work, Risalah fi istihsan al-khaud fi'l-kalam, al-Ash'ari replies to criticisms made by the literal traditionists who considered discussion about such questions as motion, rest, body accident, atom, and space an innovation and sin. He argued that the Prophet was not unaware of all these things, only that he did not discuss them, since problems concerning them did not arise during his lifetime. Moreover, there was no explicit injunction in the Quran, or from the Prophet, which prohibits discussion of such matters. On the contrary, al-Ash'ari reminded his critics, one can find the general principles (usul) underlying these physical issues and problems explicitly mentioned in the Quran and the hadiths.[14] We may infer from these remarks of al-Ash'ari that the above problems, which we associate today with physics, were widely discussed during his lifetime. Since the discussions were not merely scientific, but involved issues that clearly touched upon the religious beliefs of Muslims, they necessitated the active participation of the religious scholars. And

---

[12] See Harry A. Wolfson, The Philosophy of the Kalam (Cambridge, MA: Harvard University Press, 1976), p. 467.

[13] Fakhry, A History of Islamic Philosophy, p. 54.

[14] Sharif, op. cit., p. 225.

attempts had to be made to find answers to these problems on the basis of the general principles contained in the Quran and the hadiths.

In fact, wherever possible, al-Ashari quotes verses from the Quran and hadiths to prove his contention that rational discussion of atomism is religiously (scripturally) justified. For example,[15] he invokes the following Quranic passage to show that there is a scriptural basis for their definition of the accident (arad) as "that which cannot endure but perishes in the second instant of its coming-to-be":

Ye look for the transient things ('arad) of this world, but God looketh to the Hereafter (Chapter VIII, verse 67)

Generally, the whole Ash' arite approach to the problem of atomism was guided by religious considerations. Their approach may be summarized as follows. In the first place they formulated a general theoretical framework based on the two most important sources of Islam, namely, the Quran and hadiths. It was within this general framework that they sought to offer formulations of conceptual problems related to atomism, as wll as their solution. As regards the details, there were two possible sources or avenues open to them. The first of these were works on atomism from non-Islamic sources that were known to them. The second avenue was through their own speculative minds, relying on their reflective power and rational methods of inquiry, including elements of logic adopted from Greek philosophy. The necessry data for reflection and analysis came from the Islamic Revelation and non-Islamic atomisms. The result of this whole theoretical approach to the problem of the fundamental basis and structure of the world was an atomism which, in its totality, was unique, although, elementwise, we see similarities to, as well as divergence from earlier forms of atomism.

Nature and characteristics of Ash'arite atoms

The Ash' arites postulate the existence of indivisible particles which they express in Arabic (sing.) as al-juz' alladhi lam yatajazza', literally meaning "the part that cannot be divided." These particles are the most fundamental units

[15] For more information on the various Quranic verses and prophetic hadiths quoted by al-Ash' ari, see his Maqalat al-Islamiyyin and Risalah fi istihsan al-khaud fi'l-klam.

that could exist, and out of which the whole world is created. Accordingly, we will refer to them as the 'Ash' arite atoms.'

The world, which the Ash' arites define as everything other than God, consists of two distinct elements, atoms and accidents (a'rad). The atom is the locus which gives subsistence to the accidents. An accident cannot exist in another accident but only in an atom or a body composed of these atoms. Conversely, a body cannot be stripped of accidents, positive or negative, such as color, smell, life, knowledge, or their opposites.

The first major characteristic of the Ash' arite atoms is that they are devoid. of size or magnitude (kam), and are completely homogeneous. In other words, they are entities without length or breadth, but which combine to form bodies possessing dimensions. They therefore differ from the atoms of Leucippus and Democritus or those of Epicurus in Greek philosophy, which are always presented as having magnitude. This is an important divergence of Ash' ante atomism from its Greek antecedents.

Not surprisingly, Wolfson poses the following question: where did such a conception of unextended atoms come from? For Wolfson, this "new idea" could not have arisen spontaneously in kalam, since "there is no conceivable reason, religious or rational, why Arabic philosophy should have departed on such a fundamental issue from its parent source.[16] And he finds it difficult to accept the view of such orientalists as Mobilleau and Pines, who have ascribed its origin to Indian atomism.

Wolfson is right in dismissing this view as mere conjecture, since it is lacking in historical evidence. But his own answer to the problem is no less conjectural. He could not throw away his suspicion that kalam must have inherited the idea in question from a Greek source. Unable to find support in the authentic writings of the Greek philosophers, he rests his hope in the spurious doxographies such as those preserved in Shahrastani's Doxography of Greek Philosophers. However, the strongest claim he could finally come up with is to say that it was on the basis of these doxographies that the

[16] Wolfson, on. cit., p. 473.

mutakallimun were most likely to have made wrong inferences about the nature of Greek atoms![17]

In our view, there is no reason why we should deny kalam of originality in the formulation of the idea of unextended atoms, even if a similar idea existed earlier in Indian atomism. Contrary to Wolfson, we think that the Ash' arites had strong reasons, both religious and rational, for insisting on the above idea. The following argument is sufficient for the purpose at hand. The atoms cannot have magnitude because extension is a property of physical space, involving the idea of boundary or surfaces. But since space too is atomized, and their theology demands that the atoms be completely independent of one another, there can be no question of the atoms occupying physical space. The atoms, themselves non-material entities, exist in an imaginary space or void. Further, the Ash' ante theology necessitates the existnece of atomic substances that could adequately serve as a basis for explaining the originatedness, ever-newness, and absolute independence upon God, of all things, physical as well as non-physical, including all the qualities predicated of substances. In our view, the extended atoms, with all that are implied in the idea of extension, are not fundamental enough to meet this theological requirement.

The second main characteristic of the Ash'arite atoms is that they are determinate or finite in number. Thus, in opposition to all schools of Greek atomists, who believed in the infinite divisibility of matter, and who maintained that atoms are infinite in number, the Ash'arites rejected the infinity of atoms on the basis of the Quranic verse: 'And He counteth all things by number' (Chapter LXXII, verse 28). Here Wolfson agrees that there is a definite scriptural basis for kalam's departure from Greek atomism.

The third important characteristic of the Ash' arite atoms is that they are perishable by nature. The Ash' arites maintain that the atom cannot endure two instants of time. At every moment of time the atoms come into being, and pass out of existence. Each atoms' duration (baqa') is instantaneous. Its momentary existence is made possible through God's supervention upon it of the accident of duration, which, like all other accidents, is perishable. In the words of al-Baqillani, the accident "perishes in the second instant of its

[17] ibid, p. 475.

coming-to-be." This perishability of atoms and accidents is a direct consequence of their theological belief that God directly intervenes not only in the coming of things into being, but also in their persistence in being from one instant to another.

If the atoms and accidents are created and annihilated at every instant, then how do we explain the fact that, as far as our ordinary experience tells us, it is the same world that continues to exist? Kalam's answer to this question has been well summarized by Professor al-Attas:

The world, after its initial existence, does not endure or continue to exist (baqa), but passes out of existence (fana); it ceases to exist at every moment of time, and what we observe of its continuance in existence is in reality the continuous renewal of its similars. Thus at every moment of time the world is in need of existence, and what we observe of the world as such is that it is ever dependent for its existence upon the Truth Most Exalted,whose act of creation is perpetually bringing forth similar worlds from non-existence into existence. 16n this way we imagine the continuance of the same world in existence, whereas in reality such is not the case.[18]

The divine activity of "perpetually bringing forth similar worlds from non-existence into existence" takes place at the atomic level, and may be explained as follows. When God creates an atom of a body, He also creates in it the accidents that cast it into being. The mement this atom passes out of existence He replaces it with a similar atom by creating in it similar accidents, that is, accidents of the same species as the one subsisting in the preceding atom, so long as He wills the same body to continue in existence. If He wills otherwise, then He would cease creating the accidents in question.

All that we observe of generation and corruption, and change and motion in the meso world, including, for the Ash' arites, miracles, are the results of 'atomic phenomena' that are directly produced by this divine activity. One of the reasons why the Ash' arites adhered fervently to their atomism is that its theoretical framework is comprehensive enough to allow for a rational explanation of miracles.

---

[18] Syed Muhammad N. al-Attas, A Commentary on the 'Hujjat al-siddiq, of Nur al-Din al-Raniri (Kuala Lumpur: The Ministry of Culture, Youth and Sports, 1986), p. 256.

If God wills a miracle to happen, for example, the instantaneous transformation of a body A into a body B, then He would cease craeting the atoms bearing the accidents or qualities predicated of the body A. What He brings instantaneously into existence instead are the atoms bearing the accidents or qualities predicated of the body B.

One other aspect of Ash'arite atomism, which we have chosen to discuss here, is the atomic nature of time and motion. Corresponding to the bodily atoms are the atoms of time. The general Ash'arite view- of motion is that both motion and rest are 'modi' of substances. A substance which moves from one point of space to another is at rest in relation to the second point, but in motion in relation to the first. This is so because motion supervenes upon the body only when it has settled in its second position.[19] For at the atomic level we cannot speak of the translation (intiqal) of the same atom from one point of space to another. Rather we should speak of its recreation at the second point, since it is annihilated in between. This means that the concept of distance in Newtonian physics is not applicable here. A corollary of this theory of motion is the affirmation of the existence of vacuum or the void.

Causality in the atomistic perspective

As we have seen, the Ash' arites atomize matter, space, and time, as a result of which the universe becomes a domain of separate, concrete entities which are independent of each other. There is no connection between one moment of their existence and the next. The Ash' arites therefore deny that there is any horizontal nexus between things. In other words they deny the Aristotelian notion of causality. How does this segmented, divided, and discontinuous reality then find its connection and unity? It is through the Divine Will which creates all things at every moment, and which is the direct and sole cause of their existence and qualities.[20] There is unity and harmony in Nature because it is brought into being,, and governed by the single will of the One.

---

[19] Fakhry, op. cit., p. 40.

[20] Nasr, Islamic Life and Thought (Albany, NY: SUNY Press, 1981), p. 96.

The Ash' arite idea of God as the sole cause of all things and of all events negates the role of secondary causes in nature. No finite, created being can be the cause of anything. It is not in the nature of things to possess a causal power or quality. The so-called power which natural objects, including human beings, seem to possess is not an effective power, for it is a derived power. The following passage from al-Ghazzali's Tahafut al-falasifah (The Incoherence of the Philosophers) summarizes the view of the Ash'arite theologians concerning causality, in opposition to the philosophers:

According to us the connection between what is usually believed to be a cause and what is believed to be an effect is not a necessary connection; each of two things has its own individuality and is not the other, and neither the affirmation nor the negation, neither the existence nor the non-existence of the one is implied in the affirmation, negation, existence, and non-existence of the other --- e.g., the satisfaction of thirst does not imply drinking, nor satiety eating, nor burning contact with fire, nor light sunrise, nor decapitation death, nor recovery the drinking of medicine, nor evacuation the taking of a purgative, and so on for all the empirical connections existing in medicine, astronomy, the sciences and the crafts. For the connections in these things is based on a prior power of God to create them in a successive order, though not because this connection is necessary in itself and cannot be disjoined -- on the contrary, it is in God's power to create satiety without eating, and death without decapitation, and so on with respect to all connections.

The philosophers, however, deny this possibility and claim that that is impossible. To investigate all these innumerable connections would take too long, and so we shall choose one single example, namely the burning of cotton through contact with fire; for we regard it as possible that the contact might occur without the burning taking place, and also that the cotton might be changed into ashes without any contact with fire although the philosophers deny this possibility.[21]

[21] Al-Ghazzali, Tahafut al falasifah. This whole passage is taken from S. van den Bergh's translation of Averroes' Tahafut al-tahafut, E.J. Gibb Memorial Series, New Seiies 19 (London: Luzac and Co., 1954), pp. 316-317. One may also refer to N. A. Kamali's

The concept of cause and effect and the idea of the necessary connection that exists between them is important to science and philosophy. In classical Greek philosophy as well as in medieval Jewish, Christian, and Islamic philosophy and science the Aristotelian notion of causality was widely accepted. In this notion explicit recognition was given to the role of finite, created beings as horizontal or secondary causes in nature. The philosophers distinguished between four kinds of causes, the material, the formal, the efficient, and the final. Even in modern science the idea of causality is of great importance, although it is no longer as comprehensive a concept as its medieval antecedent in that the efficient and the final causes are no longer taken into account in the explanation of natural phenomena.

The Aristotelian doctrine of causality is claimed to be based upon the nature of things. Each thing has its specific nature which determines its specific functions in the cosmic order. To summarize the views of the philosophers concerning causality we quote here a passage from Ibn Rushd's Tahafut al-tahafut (The Incoherence of the Incoherence), which was written as a response to al-Ghazzali's critique:

To deny the existence of efficient causes which are observed in sensible things is sophistry… For he who denies this can no longer acknowledge that every act must have an agent, The question whether these causes by themselves are sufficient to perform the acts which proceed from them, or need an external cause for the perfection of their act, whether separate or not, is not self-evident and requires much investigation and research.

And if the theologians had doubts about the efficient causes which are perceived to cause each other, because there are also effects whose cause is not perceived, this is illogical. Those things must be investigated, precisely because their causes are not perceived And further, what do the theologians say about the essential causes, the understanding of which alone can make a thing understood? For it is self-evident that things have essences and attributes which determine the special functions of each thing and through which the essences and names of things are differentiated. If a thing had not its specific nature, it would not have a special name or definition, and all

---

translation is Al-Ghazali's Tahafut al falasifah [The Incoherence of the Philosophers] (Pakistan Philosophical Congress, 1963.

things would be one--indeed not even one; for it might be asked whether this one has one special act or one special passivity or not, and if it had a special act, then there would indeed exist special acts proceeding from special natures, but if it had no single act, then the one would not be one. But if the nature of oneness is denied the nature of being is denied, and the consequence of the denial of being is nothingness.

Further, are the acts which proceed from all things absolutely necessary for those in whose nature it lies to perform them, or are they only performed in most cases or in half the cases? This is a question which must be investigated, since one single action-and-passivity between two existent things occurs only through one relation out of an infinite number, and it happens often that one relation hinders another. Therefore, it is not absolutely certain that fire acts when it is brought near a sensitive body, for surely it is not improbable that there should be something which stands in such a relation to the sensitive thing as to hinder the action of the fire, as is asserted of talc and other things. But one need not therefore deny fire its burning power so long as fire keeps its name and definition…[22]

So here we have the classic encounter of two minds, two perspectives, and two philosophies within Islam, one theological, the other scientific. Faced with this confrontation of perspectives, one is easily tempted to take sides as the past intellectual history of the Muslim peoples in the last seven hundred years or so has clearly shown. We try hard here to resist this temptation. As far as we are concerned, both men were great thinkers. Both were honest, sincere and devout Muslims. Both, in their own ways, made significant contributions to the past glory of Islam. More important still, both views on causality can be defended by appealing to the Quran.

Each perspective has a positive function to play within the intellectual universe of Islam, and each perspective caters to the intellectual needs of a specific sector of thinking people in the Islamic community. Together the two perspectives enriched Islam's intellectual culture. Both are living perspectives in the sense that in every age we can always find the two types of minds, the theological and the scientific, here typified by al-Ghazzali and Ibn Rushd respectively, existing side by side and interacting with each other,

---

[22] Averroes, op. cit., pp. 318-319.

sometimes creatively and at other times negatively, depending on the level of their intellecutal tolerance. We may find them not only among Muslims but also among people of other cultures as illustrated, for example, by the existence of the Humean and Einsteinian minds in the intellectual culture, of the West.

The theological perspective on causality seeks to explain the world and'all phenomena, the "natural" and the "supernatural" or the miraculous, in terms of the divine omnipotence alone. In order to safeguard or glorify divine omnipotence, it denies the objective reality of causal powers in creatures, given to them by God as part of their respective natures. Apart from the phrase "God has power over all things", which one finds repeated in almost every page of the Quran, there are numerous verses which provide a clear scriptural basis for the Islamicity of the theological perspective. We produce here a few examples: "It is God Who causeth the seed-grain and the date-stone to split and sprout" (6:95); "It is He Who sendeth down rain from the skies" (6:99); "It is not ye who slew them; it was God: when thou threwest (a handful of dust), it was not thy act, but God's" (8:17).[23]

In all these verses secondary, horizontal, or immediate causes appear to be negated by being absorbed into the Ultimate Cause which is presented as the direct and sole cause of all the phenomena in question. The last verse, which refers to divine help given to Muslims at the battle of Badr, is the most explicit in its denial of the power of causation in created beings.

The scientific perspective on causality seeks to explain the world and all phenomena, including the miraculous, in terms of "natural causes" or by appealing to the natures of things, given to them by God. The Muslim philosophers never denied the reality of God as the Ultimate Cause of all things, nor did they ever deny the possibility of miracles, as often alleged by their opponents. But as men of science, they emphasized the importance of immediate and secondary causes, without, however, forgetting their divine origin. Their doctrine of a vertical causal chain, beginning with physical causes and ending up finally with the Necessary Being (God) as the First or

[23] Further relevant verses include 56:63-64; 67:19.

Ultimate Cause, appears to its opponents as compromising or undermining the idea of God as absolute determination and freedom.

It can be said that in the perspective of philosophers like al-Farabi and Ibn Sina the world is dependent not only upon God's Will but also His Being. It is clear, however, that the aspect of God which they glorified is His Being and Intelligence (Knowledge and Wisdom). In order to safeguard and glorify this aspect of Divine Reality, they emphasized the objective reality of the essences and attributes of created things. "Creation," they maintained," is the giving of Being by God and the shining of the rays of intelligence so that each creature in the Universe is related to its Divine Source by its being and its intelligence.:"[24]

The attitude of the philosophers toward miracles or "supernatural" events may be best illustrated by the following anectode. It was reported in traditional Muslim sources that in a meeting bettwwen Ibn Sina and Abu Sa' id, a Sufi, in a bath house, the latter asked our philosopher-scientist if it were true that a heavy body seeks the center of the earth. Ibn Sina replied that this was absolutely true. Abu Sa' id subsequently took up his metal vase and threw it into the air, whereupon instead of falling down it stayed up in the air. "What is the reason for this?" he asked. Ibn Sina answered that the natural motion would be the fall of the vase but that a violent force was preventing this natural motion. "What is this violent force?" asked Abu Sa' id. "Your soul!" replied Ibn Sina, "which acts upon this."[25]

Ibn Sina's answer is most instructive. Here we have the typical traditional Muslim scientific mind at work! He did not attribute the miraculous event to the direct intervention of divine power. He explained it instead as the effect of a "natural" cause in the form of an invisible, violent force. Obviously then, by "natural cause," we do not mean here the same thing as it is understood in modern materialistic philosophy. In contrast to their modern counterparts who seek to explain the "higher" in terms of the "lower," traditional Muslim scientists identify the essential causes of things with principles that are higher, on the ontological scale, than the things explained. To explain miracles "naturally' or scientifically, they extend the

[24] Nasr, Islamic Cosmological Doctrines (London: Thames & Hudson, 1978), p. 213.
[25] Ibid., p. 194.

domain of natural causal powers beyond the physical and subtle worlds to include entities described as having superior natures and of which the miracles are perceived as the immediate effects. Thus in the anecdote Ibn Sina identifies the cause of Abu Sa' id's miracle with an invisible force radiating from the latter's soul, whose nature is superior enough to subdue the gravitational pull of the earth.

The philosophers' treatment of the phenomenon of revelation experienced by the Prophet provides another good illustration of their "scientific" attitude toward miracles and, more generally, causality. The revelation of the Quran is generally regarded by Muslims as the Prophet's greatest miracle. And yet, as explained by the philosophers in their treatises on faculty psychology,[26] this "greatest miracle" is to be attributed to the superior nature of the Prophet's intellect. They maintained that, by nature, the prophetic intellect is superior to all other human intellects, and is in constant, inner contact with Gabriel, the Archangel of Revelation. It is by virtue of its perfect nature that the prophetic intellect becomes the recipient of divine revelation.[27]

The many Muslims, the attempt by the philosophers to formulate a scientific theory of revelation on the basis of psychological principles could only mean the downgrading of the miraculous status of this greatest miracle. In the perspective of the philosophers, however, what greater miracle can there be than the fact that a human intellect is in direct communiction with God's archangel. And who can blame the philosophers for emphasizing the intermediary role of Gabriel, when no less an authrotity than the Quran itself provides a clear support for their standpoint. Says the Quran: "Verily this is the word of a most honorable messenger (i.e. Gabriel), endowed with power, with rank before the Lord of the Throne, "(81:19-20).

---

[26] For a detailed discussion of the philosophers' theory of revelation within the framework of faculty psychology, see 0. Bakar, Classification of Knowledge in Islam (Kuala Lumpur: The Institute for Policy Research, 1991), Chapters 2 and 3.

[27] Philosophers like al-Farabi and Ibn Sina placed the prophetic intellect in the highest position in the hierarchy of the faculties of the human soul. They identified the prophetic intellect with the "acquired intellect" (al-'aql al-mustafad) in its highest perfection. See ibid, p. 64.

The scientific perspective on causality too may claim its Islamicity on the basis of scriptural support. We produce below some of the relevant verses[28] from the Quran: "Glorify the name of thy Guardian-Lord Most High, Who hath created, and further, given order and proportion, and Who hath ordained laws and granted guidance" (87:1-3); "By the (winds) that scatter broadcast; and those that lift and bear away heavy weights; and those that flow with ease and gentleness; and those that distribute and apportion by command" (51:1-4); "God is He who created seven firmaments and of the earth a similar number; through the midst of them (all) descends His Command: that ye may know that God has power over all things, and that God comprehends all things in (His) Knowledge" (65:12).

The first and second passages confirm the philosophers' belief in the objective reality of natures, essences, or attributes of created things, and of their intermediary powers of causation. In particular, the second passage reminds us of one very important point. In the Quran God swears in the names of the natures or realities of things, implying that He Himself acknowledges their objective reality. The last passage is perhaps the most significant of all. It would not be an exaggeration if we were to claim that the whole passage provides the best possible summary of the philosophers' theory of causality. That part of the passage in italics, which refers to the "descent of the divine command" (yatanazzal al-amr) through the different levels of reality, provides a clear scriptural confirmation of their doctrine of "vertical causal chain." Moreover, it is made perfectly clear in the passage that the whole idea of this vertical causal chain is so that through it man will finally be led to acknowledge divine omnipotence and divine omniscience. This is the philosophers' way to the glorification of divine power and intelligence.

The foregoing discussion clearly shows that both positions are grounded on solid religious and rational foundations. There are some who think that the philosophers' perspective on causality has been dealt a serious blow by al-Ghazzali's wellknown "counter-example of the fire." In denying fire its nature as a burning agent, al-Ghazzali was no doubt influenced by the story of the miracle of Prophet Abraham mentioned in the Quran. Abraham was thrown into the fire by his polytheist enemies, but was not burnt. We were

[28] For more of the relevant verses, see, for example, 48:7; 82:10; 82:19.

once personally reminded by Schoun that the same Quranic verse can be used as an argument against the theologians in favour of the philosophers.

The verses in question read as follows: They said, "Burn him and protect your gods, if ye do (anything at all)!" We said, "O Fire! Be thou cool, and (a means of) safety for Abraham!" (21:68-69). Schuon answers on behalf of the philosophers that if indeed fire is not a burining agent, then God would not have commanded the fire to cool!

In the light of the denial, by the theologians, of the Aristotelian notion of causality, it is pertinent to ask whether the idea of "laws of nature' has any meaning for them, for in natural science it is inseparably linked to the idea of causality. By "laws of nature," we mean the regular relationships, qualitative as well as quantitative, that exist between individual things in nature, as manifested in the uniformity of sequence of cause and effect. The Ash' arites do not deny the fact that natural phenomena display a remarkable uniformity. But in their view this uniformity is only apparent, not real in the sense that it has no objective existence. It is no more than a mental construct or a habit of the human mind.

It is the habit of the mind to connect two phenomena together as cause and effect. For example, by observing the phenomenon of heat connected with fire, the mind thinks that it is the fire which causes the heat, whereas in reality it is God who wills the fire to be hot. Therefore in the perspective of the Ash'arites, "laws of nature" are not objectively real. They are mental constructs determined by the will of God and given the status of "law" by Him.

The place and significance of Ash'arite atomism

As we have noted, Ash'arite atomism occupies an important place in Sunni theology. As a philosophy of nature, it differs from those conceived by the Peripatetic philosophers and the Shi'ite theologians in that the latter emphasize the substantial continuity of things and the importance of the causal chain in nature. However, it has many similarities to the Sufi conception of perpetual creation and annihilation of the world.

The occasionalism of Ash' arite kalam had a great impact upon Latin scholasticism as well as upon post-Renaissance philosophy of Descartes, Malebranche, and Hume. The man credited with the transmission of kalam to the Latin West was the famous Jewish philosopher and theologian, Musa b. Maymum (Maimonides). His The Guide for the Perplexed, which provides a comprehensive account of kalam, was translated into Latin as early as 1220, and later served as the basis of Thomas Aquinas' critique of Islamic occasionalism. Interestingly enough, in his repudiation of causality, Hume presented arguments very similar to those offered by the Ash'arites, but without positing the Divine Will as the nexus between two phenomena which the mind conceives as cause and effect, Morevoer, some of his examples were the same as those of the Ash'arites. This led certain scholars to assume that Hume must have been acquainted with Ash'arite atomism through the Latin translations of Averroes' Tahafut al-tahafut and the above mentioned work of Maimonides (its Arabic title: (Dalalat al-ha' irin).

Ash' ante atomism also possesses a great significance for contemporary historians and philosophers of sciences. This is because of its many similarities to the atomic theory of modern physics. One important consequence of this is that we are forced to reexamine some of the assumptions underlying the currently accepted views concerning the epistemological foundation of scientific methodology and scientific theories. For Ash' ante atomism suggests to us the possibility of another way of viewing and understanding nature, which is different from the one adopted in modern science, but which was successful in formulating a unified atomic theory that shares several common features with contemporary quantum physics.