

# Ibn Sīnā and Descartes on the Origins and Structure of the Universe: Cosmology and Cosmogony

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This article begins with an examination of Ibn Sīnā's conception of emanation and its origin within the Greek and Islamic philosophical traditions. Secondly, I present his view of the multiplicity of the universe from a single unitary First Cause, followed by a discussion of the function of the Active Intellect in giving rise to the existence of the sublunary world and its contents. In the second part of the article, I consider Cartesian cosmology, without, however, going into detail about what Descartes calls the 'imaginary new world,' the problems arising from the mechanical worldview. Note is made of the conflict between Descartes and the Scholastic and Orthodox Christian concept of cosmos. This article provides an account and comparison of Ibn Sīnā's and Descartes' portrayal of the origins and structure of the universe of both philosophers.

**A**s a philosopher and a scientist, one of Ibn Sīnā's greatest ambitions was to offer an all-embracing explanation of the celestial and terrestrial realities of the universe.<sup>1</sup> Ibn Sīnā's overarching intellectual philosophical system presents us with an ordered hierarchical structure of living reality, a cosmos, or universe that emanates eternally from the wholly unitary First Cause, the Necessary Existent. The cosmogonic unfolding of the universe from the Perfect Being takes place through the process of emanation.

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<sup>1</sup> For the life and works of Ibn Sīnā, see W. E. Gohlman, *The Life of Ibn Sīnā* (Albany: State University of New York Press, 1974). For modern and recent sources, see also G. M. Wickens, ed., *Avicenna, Scientist and Philosopher* (London: Luzac, 1952), 9–29; S. M. Afnan, *Avicenna: His Life and Works* (London: George Allen & Unwin, 1958), 57–83; L. E. Goodman, *Avicenna* (London and New York: Routledge, 1992), 1–30; D. Gutas, *Avicenna and the Aristotelian Tradition* (Leiden: E. J. Brill, 1988), 115–130; A. M. Goichon, *The Philosophy of Avicenna and Its Influence on Medieval Europe*, trans. M. S. Khan (Delhi: Motilal Banarsidas, 1969), 5–9; F. Rahman, "Ibn Sina," in M. M. Sharif, ed., *A History of Muslim Philosophy* (Wiesbaden: O. Harrasowitz, 1963), 480–481.

In this emanationist cosmos, there exist two cosmic movements, namely descent and ascent. In a descending cosmic movement, the various levels of reality emerge eternally from the single source of creation, that is, the First Cause, the Perfect Being, and descend in an unbroken succession of stages from the First Intellect, and therein through the Active Intellect to the last and lowest realities, the four elements, that is, the fundamental components of the sublunary world. It is a cosmic movement from unity towards an ever-increasing multiplicity. In this cosmos, there is also an ascending movement, that is, the movement of the spiritual life, which goes from multiplicity back to the Perfect Being. The movement of return or ascent appears especially in Ibn Sīnā's allegorical cosmological writings. It is the spiritual movement through which the soul of man, the traveler of Ibn Sīnā's universe, can achieve perfection and return to its ontological and intellectual source, the Perfect Being.

Ibn Sīnā gives an account of the origin and structure of the universe as an eternal emanation, or procession from the unitary First Cause. The conception of emanation can be described as a process that presumes a perfect and transcendent principle, that is, God, from which all reality, by necessity, proceeds. Here, it should be emphasized that the background of Ibn Sīnā's thought is clearly Neoplatonic. In fact, the emanation process originally appears in Plato's analogy of the Good to the sun as well as his perception of the Good as the light of the Intelligible World of Forms (*Republic*, 508a). The illumination of the intelligible world of forms from the Good is explained in terms of the illumination of the light from the sun. However, the theory of emanation appears in full clarity and systematic order in the philosophy of Plotinus. In the Neoplatonic view, the concept of the "emanation" is often identified with "efflux" or "radiation," which basically refers to a "necessary, involuntary, natural, and therefore blameless process."<sup>2</sup>

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2 The Greek words from which Ibn Sīnā derived his understanding is *eklampsis* and *proodos*. The intermediary for much of this is the Arabic Plotinus texts and also the Arabic Proclus texts. On these notions, see especially G. Endreß, *Proclus Arabus* (Beirut and Wiesbaden, 1973) and Peter Adamson, *The Arabic Plotinus* (London: Duckworth, 2002). For an English derivation of emanation from the Latin *emanation*, *emanare*, see Paul Edwards, ed., *The Encyclopedia of Philosophy* (New York: Collier Macmillan, 1967), 2:473; and P. A. Angeles, *A Dictionary of Philosophy* (London: Harper & Row, 1931), 73.

Following his Greek ancestors, Plotinus often uses the analogy of the sun and its light, or fire and its heat, or snow and its coldness, to describe the emanation of Divine Intellect (*Nous*) from the One.<sup>3</sup> In this metaphor, the radiation of light from the sun represents the radiation of the Intelligible World from its origin. In order to explain this procession of the Divine Intellect, and in turn the Soul, from the One, Plotinus appeals to the productivity of living things observed in the natural world. All living things, when they reach maturity or perfection, necessarily reproduce a kind of existence, which Plotinus calls “a kind of image of the archetypes.” For example, the substance of fire or sun has a primary or internal activity proper to itself, and therefore gives rise to an external or secondary activity, that is, heat or light. Although the secondary activity (heat or light) is reproduced by the primary one, that is, the sun, it is essentially different from it, at least with regard to the degree of existence. The cases of productivity of living things are applied to the One because it represents the highest perfection. As a Perfect Being, the One cannot remain in complete isolation without emanating existence. The absolute perfection gives existence to things that are different from it. Plotinus describes this emanation process as involuntary. The Supreme Principle, which is transcendent, ineffable, and absolutely simple, must “overflow”; just as what is mature must beget or what is full must overflow. Plotinus himself makes it clear that “all things when they come to perfection produce; the One is always perfect and therefore produces everlastingly; and its product is less than itself.”<sup>4</sup>

The Plotinian doctrine of emanation can be interpreted as follows: the sun is the source of the light, just as the One is the source of all reality in the universe. Without any loss of its own substance

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3 For a primary source of Plotinus' theory of emanation, see Plotinus, *Enneads*, ed. and trans. by A. H. Armstrong (London: Heinemann, 1966–1984), 5:31 and onwards. For secondary sources, see especially A. H. Armstrong's works: *The Cambridge History of Later Greek and Early Medieval Philosophy* (Cambridge: Cambridge University Press, 1970), 236–263; *The Architecture of the Intelligible Universe in the Philosophy of Plotinus* (Amsterdam: Adolf M. Hakhert, 1967), 49–64; *Plotinus* (London: Allen & Unwin, 1953), 33–40; *An Introduction to Ancient Philosophy* (London: Methuen, 1947), 185–186; as well as J. Rist, *Plotinus: The Road to Reality* (Cambridge: Cambridge University Press, 1967), 66–83; and Dominic J. O'Meara, *Plotinus: An Introduction to the Enneads* (Oxford: Clarendon Press, 1993), 60–97.

4 Plotinus, *Enneads*, trans. Armstrong, 5:31–32.

the sun emanates light. Although the light is dependent upon the sun, it cannot be considered identical to it. The destruction of the sun means the complete destruction of the light. In the same way, the universe is conceived as an outpouring of the Perfect Principle, because of its perfect nature. Although the universe is dependent on the One for its existence and order, it is not identical to it. Without the Perfect and Supreme Principle, there is no existence and order in the universe at all. If we are farther away from the sun, the light becomes dimmer, and finally passes into complete darkness. Similarly, if one is farther away from the Divine Being, he possesses less perfection and spirituality. The intelligence (*nous*), which is the first product of the supreme principle, is the closest to the One. It corresponds to the Divine Mind, the world of forms or ideas, and therefore the totality of true beings in the Platonic sense. From intelligence emanates the soul (*psyche*). By degree it becomes less perfect and multiplies further. From the *psyche* emanates the material universe. The process of emanation is eternal and its source always remains transcendent and undiminished. Plotinus clearly expresses that “if there is a second after the One it must have come to be without the One moving at all, without any inclination or act of will or any sort of activity on its part.... It must be a radiation from it while it remains unchanged, like the bright light of the sun which, so to speak, runs around it, springing from it continually while it remains unchanged.”<sup>5</sup>

It is clear that the emanation of the universe from the One is not only free but also necessary. It is free in the sense that it is completely spontaneous and unconstrained. It is necessary because it is inconceivable that it not take place. Therefore, the emanation is considered to be a faultless process. Without it the perfect Being, *the One*, would have remained only potentiality, and thus it would not have revealed its hidden richness. This is the importance of the metaphor of radiation or emanation (as of light from the sun). But we must question whether or not the conception of emanation has any philosophical meaning when it is applied to spiritual beings. Although the analogy of the sun and its light give insight into the emanation process, clearly it does not explain the relationship between the Divine Being and its product. The analogies of fire and heat or sun and light imply an emanation process, but clearly it is

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5 Ibid., 31.

a physical process. It should not be relevant to immaterial beings. If we apply this material process to the Divine Being, we simply consider His generation in a mechanical way, just as a certain cause produces a certain effect. Plotinus himself was quite aware of the fact that the structure of living things observed in the material world does not sufficiently explain the generation of the universe by the Divine Being. In fact, the critique of Plotinus' use of physical analogies applies equally to Ibn Sīnā and others, such as al-Fārābī.

### **Ibn Sīnā's Conception of Emanation of the Universe from the Perfect Being**

In the history of philosophy it is commonly accepted that the founder of Neoplatonism in the Islamic tradition was al-Fārābī.<sup>6</sup> This being the case, almost all the major themes of Ibn Sīnā's metaphysics, ontology, psychology, cosmology, and cosmogony are implicit in al-Fārābī's philosophy. Prior to Ibn Sīnā, al-Fārābī offered a systematic account and order of the emanation of beings from the Divine Being. The argument that he provides here is reminiscent of Proclus. His core argument is that the Divine Being (characterized by al-Fārābī as the First), because of the superabundance of his being and perfection, eternally and continually emanates the whole order of being in the universe by a "necessity of nature." The philosopher locates the ultimate, the First Being at the summit of the universe as one, incorporeal, and the First Cause of all contingent beings. The potential existence of the whole cosmic system is already present in the knowledge of the First or Divine Being. Everything in the universe comes into existence through the very act of intellection of the First Being, who is pure and actual Intellect. In the chain of being, the Divine Being, through its eternal thought of itself, generates a single second being which is the First Intellect, the supreme archangel. Like the Divine or First Being, this being is also an immaterial substance. The First Intellect has "the First Being" or God, as the object of its thought, and a third being, which is the second Intellect, in consequence of that necessarily emanates from it. The First Intellect has also itself, as a second object of thought,

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6 For a clear account of al-Fārābī's philosophical agenda and his successors, see S. Radhakrishnan, ed., *History of Philosophy, Eastern and Western*, vol. 2: *Persian, Greek, Jewish, Medieval, Catholic, and Islamic Thought* (London: Allen & Unwin, 1953), 652–670.

and it in consequence of that emanates the outermost heaven or the First Heaven (*al-samā' al-ūlā*). Here, in al-Fārābī's scheme, there are two aspects in the thought of each incorporeal intellect: in the series, each intellect, by reason of the intellection of "the First Being," eternally and continually emanates the next intellect, while by reason of comprehension of its own essence it emanates a celestial sphere.<sup>7</sup> In this manner, a total of ten intellects emerge from the First Being, and each of them is associated with the origination of an astral phenomena like the fixed stars: Saturn, Jupiter, Mars, the Sun, Venus, Mercury and the moon, respectively. The process in turn continues until the Tenth Intellect and the ninth celestial sphere or heaven, which is that of the Moon, are generated. The Tenth Intellect (Eng., the active or agent intellect; Gr., the *nous poiétikos*; Lat., the *dator formarum*; Ar., *al-ʿaql al-faʿal*) is not only the emanating cause of natural forms appearing in matter, consisting of the souls of plants, animals, and man, but also the cause of the actualization of the human intellect.

Ibn Sinā, not unlike al-Fārābī, "builds upon an Aristotelian-Ptolemaic cosmological substructure a Neo-Platonic edifice, in which the emanationist scale of being has been thoroughly incorporated. Although essentially similar to al-Fārābī's, this scale of being is more complete and the treatises embodying it more comprehensive."<sup>8</sup> Thus, having relied upon the sources (Greek philosophers such as Aristotle and Plotinus, and their commentators, and Islamic philosophers, notably al-Fārābī, and the Islamic theologians of *kalām*), Ibn Sinā sets out to describe the process of the generation of the universe from the One, the Necessary Being through intellection.<sup>9</sup> The philosopher's

7 Al-Fārābī puts it more clearly as follows, "From the First emanates the existence of the Second. This Second is, again, an utterly incorporeal substance, and is not in matter. It thinks of (intelligizes) its own essence and thinks the First. What it thinks of its own essence is no more than its essence. As a result of its thinking of the First, a third existent follows necessarily from it; and as a result of its substantification in its specific essence, the existence of the first Heaven follows necessarily." See al-Fārābī, *al-Madīna al-Fāḍila*, ed. and trans. Richard Walzer, *Al-Farabi on the Perfect State* (Oxford: Clarendon Press, 1985), 101.

8 M. Fakhry, *A History of Islamic Philosophy* (New York: Columbia University Press, 1970), 153.

9 For an analysis of the sources and evolution of Avicenna's metaphysics, see Robert Wisnovsky's invaluable book, *Avicenna's Metaphysics in Context* (London: Duckworth, 2003), Part I and II, 21ff. In the book, the author appears

own version of the emanation process is also specially designed to explain both the material and spiritual aspects of the reality from the One Necessary Being. Perhaps, it would be better to say that his new kind of cosmological system was an alternative explanation of the sublunary and translunary realities of the universe from the One Perfect Being, to that of the Qurʾānic doctrine of “creation.”

Ibn Sinā established, as had his predecessors, notably al-Kindī and al-Fārābī, a complex and comprehensive cosmology and emanation scheme in order to explain the relationship between the One Necessary Being and the universe. His unique ambition as a philosopher and a scientist in his cosmology and cosmogony was to demonstrate how a plural and contingent universe can emerge from the totally unitary First Cause, who is eternally present and transcendent with regard to all multiplicity. At what stage does the plurality appear in the process of generation of the universe from the Perfect Being? Clearly, the alternative solution to this fundamental philosophical problem, which we address, is the doctrine of emanation. Here it should be pointed out that Plotinus’ and al-Fārābī’s view of a hierarchy of beings from the One is a motivating force for Ibn Sinā in his account of the universe in an emanationist manner.<sup>10</sup> Particularly, those two Neoplatonic assumptions, namely that the

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to place more emphasis on the theologians and less on the Greek philosophers than other experts of Islamic philosophy do by focusing on two important topics, God as cause and the soul as cause, in Avicenna and his predecessors.

- 10 Ibn Sinā’s version of the emanation scheme has been outlined and considered in a large number of primary and secondary sources. For the primary sources see Ibn Sinā (Avicenna), *al-Shifāʾ: al-Ilāhiyāt*, ed. G. Anawati, et al. (Cairo: Amiriyya, 1960), 401–414; Ibn Sinā, *Kitāb al-najāt* (Cairo, 1938), 273–278; P. Morewedge, *The Metaphysica of Avicenna* (London: Routledge and Kegan Paul, 1973), 53–54, 76–79, 103, 142–143, 258–262. For secondary sources, see particularly Afnan, *Avicenna*, 132–135; S. H. Nasr, *An Introduction to Islamic Cosmological Doctrines* (Cambridge: Harvard University Press, 1964), 202–214; S. H. Nasr, *Three Muslim Sages* (Cambridge: Harvard University Press, 1964), 29–30; H. Corbin, *Avicenna and the Visionary Recital*, trans. W. R. Trask (Princeton, NJ: Princeton University Press, 1988), 46–101; Ian Richard Netton, *Allah Transcendent* (London and New York: Routledge, 1989), 162–172; P. Lee, “Saint Thomas and Avicenna on the Agent Intellect,” *Thomist* 45 (1981), 45–46; Fakhry, *History*, 156; O. Leaman, *An Introduction to Medieval Islamic Philosophy* (Cambridge: Cambridge University Press, 1985), 34; P. Heath, *Allegory and Philosophy in Avicenna* (Philadelphia: University of Pennsylvania Press, 1992), 35–48; Rahman, “Ibn Sinā,” 481–482; H. Davidson, *Alfarabi, Avicenna, and Averroes on Intellect* (Oxford: Oxford University Press, 1992), 74–82.

process of generation or existence takes place through intellection and the principle that “from the One, or Unity, to the extent that it is one, only one can come into existence (*ex uno non fit nisi unum*)” play a central role in his cosmology.<sup>11</sup>

For Ibn Sīnā, the universe consists of two fundamental parts, namely the translunary world and the sublunary world. The translunary or celestial world comprises nine principal spheres. These are the outermost sphere, the sphere of the fixed stars and the seven spheres, which include the planets, the sun, and the moon. Each sphere is moved by its mover, that is, an incorporeal intelligence. Through a series of emanations there appears to be an intimate relationship between spheres and their intellects. In comparison to this, Descartes, as we shall discuss later, never states directly that the universe comprises a celestial or translunary part, in addition to the material one. For the Cartesian universe there is only one phenomenon, that is, the natural world that can be explained in terms of the size, shape, and movements of particles of matter.

According to Ibn Sīnā, there is no doubt that the universe is an eternal effusion or emanation from the Necessary Existent; thus what we must consider is the conception of generation from the Necessary Being. How can the contingent beings emanate from the Divine Being without introducing any form of plurality and change in Its Being? In this emanationist worldview, the process of intellection or contemplation, and the process of the giving of existence, are considered identical, that is, the process of intellection refers to the process of generation. In the hierarchy of beings, the lower orders of reality emerge from the higher ones during the course of intellection. In his doctrine of cosmogony, Ibn Sīnā locates the Necessary Being at the summit of the universe as one, incorporeal, and the First Cause of all contingent beings. The potential existence of the whole cosmic system is already present in the knowledge of the Necessary Being. Everything in the universe comes into existence through the very act of intellection of the Necessary Being, who is

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11 See Morewedge, *Metaphysica*, 47–64; Nasr, *Three Muslim Sages*, 29; Davidson, *Alfarabi*, 75; Afnan, *Avicenna*, 133; for a useful discussion of the Neoplatonic elements in Ibn Sīnā’s philosophical system, see also A. L. Ivry, “An Evaluation of the Neoplatonic Elements in al-Fārābī’s and Ibn Sīnā’s *Metaphysics*” in *Acts of the International Symposium on Ibn Turk, Khwārezmī, Fārābī, Beyrūnī and Ibn Sīnā* (Ankara, 1990), 135–145.

pure and actual Intellect. In his *Metaphysica in the Dānish nāma-i ʿalāʾī* (The book of scientific knowledge) Ibn Sīnā writes:

And the Necessary Existent knows all things as they are, even with respect to their complete causation (*tamāmī*), since Its knowledge of things comes not from second hand information, from intermediaries, but from Itself; for all things and the causes of all things are due to it. In this sense wisdom can be attributed to the Necessary Existent and Its wisdom consists of having complete knowledge (*ilm*). The Necessary Existent is that being to Whom the being of all things is due, Which has endowed all things with the necessity of being. It has also bestowed necessity upon things external to Its own necessity in a similar manner.<sup>12</sup>

From the passage it is clear that the wisdom of the Necessary Existent is the existential source of all things in the universe. Everything in both celestial and terrestrial worlds is necessarily connected to the others and each of them acts out of necessity, by reason of their nature, in the same way as their Divine Source involved necessity in the act of self-intellection of His thought for the genesis. In this cosmology, the process of emanation is confined to the act of self-intellection or cogitation. In other words, the Necessary Being cogitates Itself as not only the pure act of thought but also the ultimate source of all contingent beings in the universe. From the very act of the self-intellection of the Necessary Being, as the cause and the source of all contingent things, the whole perfect cosmic system and the order that penetrates it come into existence. Here, in the process of generation or emanation, there is some kind of “necessary” connection between the two, that is, thought and action. When we think of the ultimate power of the Necessary Being, we always must bear in mind the “necessary connection” between thought and action. Everything emerges necessarily from the Necessary Being’s contemplation of His own nature as the pure act of thought. This being the case, the process of generation does

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12 Morewedge, *Metaphysica*, 70.

not involve any other sort of action, like will, intention, or passion, but only “necessity.”<sup>13</sup>

The implication of this cosmology is, clearly, the indispensable functioning of the laws of the universe—a result of the act of intellection of celestial intellects or agents in the chain of existence, independent of the Necessary Existent’s direct intervention, choice, or will. For instance, in the terrestrial world, every entity, whether inert or alive, functions according to its own nature or the laws of matter bestowed on it by the Tenth Intellect, that is, the Active Intellect, without any direct intervention or will of the Necessary Existent. Here, we have a universe in which everything is necessarily connected and functions mechanically. A similar philosophical theme has also been expressed in Cartesian cosmology. Descartes, who does not support such a Neoplatonic doctrine of emanation, considers the generation of the universe in terms of a mechanically conceived automatism.<sup>14</sup>

In Ibn Sīnā’s emanationist cosmology, the first entity that emerges from the emanation of the First Cause is the First, or Universal, Intellect (*al-ʿaql al-awwal*), and the First Caused (*al-maʿlūl*

13 Avicenna, *The Metaphysics of the Healing*, trans. M. E. Marmura (Provo, UT: Brigham Young University Press, 2005), 326–328. See further on this issue, G. F. Hourani, “The Dialogue between al-Ghazālī and the Philosophers on the Origin of the World,” *Muslim World* 48 (1958), 308–314; A. Hyman, “Aristotle, Algazali and Avicenna on Necessity, Potentiality and Possibility,” in *Florilegium Columbianum: Essays in Honour of Paul Oskar Kristeller*, ed. K. L. Selig and R. Somerville (New York: Italica Press, 1987), 73–88; E. L. Fackenheim, “The Possibility of the Universe in al-Farabi, Ibn Sīnā and Maimonides,” in *Essays in Medieval Jewish and Islamic Philosophy*, ed. A. Hyman (New York: KTAV Publishing House, 1977), 303–334; A. L. Ivry, “Destiny Revisited: Avicenna’s Concept of Determinism,” *Islamic Theology and Philosophy*, ed. M. Marmura (Albany: State University of New York Press, 1984), 160–171.

14 Throughout this article, references to Descartes’ writings are made in parentheses in the main body of the text, giving short work or section title, followed by part and article number where appropriate (e.g., *Principle of Philosophy* or *Passions of the Soul*), followed by volume (in Roman numerals) and page number of the standard Franco-Latin and English editions of Descartes—AT and CSM or CSMK respectively. Passages are quoted verbatim from the translations in CSM and CSMK. CSM designates John Cottingham, Robert Stoothoff, and Dugald Murdoch, eds. and trans., *The Philosophical Writings of Descartes*, 2 vols. (Cambridge: Cambridge University Press, 1985). CSMK designates volume 3 of the preceding, by the same editors/translators and Anthony Kenny (Cambridge: Cambridge University Press, 1991). Descartes, AT XI 34; CSM I 91.

*al-awwal*).<sup>15</sup> This being is also named “as the Supreme Cherub or Archangel with the personal name of *Wajh al-Quds*.”<sup>16</sup> It is the mover of the outermost heavenly sphere.<sup>17</sup> The First Cause necessarily and eternally emanates this first effect, the First Intelligence, through the contemplation of His own essence. Like its origin, this effect is numerically one. However, the nature of the first intelligence is no longer absolutely simple, because it is not *necessary by itself*, but only *possible*, and God has actualized its possibility. To be sure, Ibn Sīnā’s ontological distinction between essence, or quiddity (*māhiyya*), and existence (*wujūd*), and also his division of beings as the Necessary (*wājib*), possible (*mumkin*), and impossible (*mumtaniʿ*) in his metaphysics, play a central role in his cosmology.<sup>18</sup> Nasr, a distinguished scholar of Islamic science and philosophy, points out that “the reality of a thing depends upon its existence, and the knowledge of an object is ultimately the knowledge of its ontological status in the chain of universal existence which determines all of its attributes and qualities.”<sup>19</sup> Under the influence of his own metaphysical predilections, Ibn Sīnā argues that the First Intelligence is necessarily existent by virtue of its Cause, and possibly existent due to itself. In this regard the philosopher states:

An entity is a Necessary Existent on the condition that its cause does not exist. Since a contingent being comes into existence due to the Necessary Existent, it is one type of an entity with respect to its relation (*ḥukm*) to the Necessary Existent, having been realized due to

15 Avicenna, *Metaphysics*, trans. Marmura, 328, 330.

16 Netton, *Allah Transcendent*, 163. See also, Corbin, *Avicenna*, 58, 61–63; Nasr, *Three Muslim Sages*, 29; Nasr, *Islamic Cosmological Doctrines*, 203; Heath, *Allegory*, 37; Davidson, *Alfarabi*, 75; Afnan, *Avicenna*, 133.

17 Avicenna, *Metaphysics*, trans. Marmura, 328.

18 See further, S. H. Nasr, “Existence (“Wujūd”) and Quiddity (“Mahiyyah”) in Islamic Philosophy,” *International Philosophical Quarterly* 29 (1989), 409–428; Nasr, “Post-Avicennan Islamic Philosophy and the Study of Being,” in *Philosophies of Existence, Ancient and Modern*, ed. Morewedge (New York: Fordham University Press, 1982) 337–344; P. Morewedge, “Greek Sources of Some Near Eastern Philosophies of Being and Existence,” also in *Philosophies of Existence*, 285–336; F. Rahman, “Essence and Existence in Avicenna,” *Mediaeval and Renaissance Studies* 4 (1958), 1–16.

19 Nasr, *Three Muslim Sages*, 25.

the Necessary Existent, but another type of entity with respect to itself.<sup>20</sup>

In the universe, plurality or multiplicity arises from the act of intellection of First Intellect. It eternally and continually emanates from the eternal thought of the essence of the Necessary Being. Regarding emanated intellects, Ibn Sīnā himself states that:

the separated intellects are numerically many. Therefore, they do not come into existence from the first simultaneously; but it must be the case that the highest of them is the first existent (proceeding) from Him, followed successively by one intellect after another. Because there is beneath each intellect a sphere with its matter and its form, which is the soul, and (also) an intellect below it, there is beneath each intellect three things in existence.<sup>21</sup>

Accordingly, in the thought of the First Intelligence there appear three aspects: (1) its intellection of the essence of the Necessary Being, (2) its intellection of its own essence as a being that is necessitated by reason of the Necessary Being, and (3) its intellection of its own essence as a possible being. These three aspects of intellection or knowledge of the First Intellect give rise to three distinct creations in the hierarchy of being. That is, the First Intellect contemplates the necessary existence of God and as a result of that it necessarily emanates a Second Intellect. When the First Intellect contemplates its own essence as a being, which is necessitated by virtue of the First Cause, by that means it emanates a Soul for the outermost sphere, that is, the Soul of the first heaven. And finally, insofar as it thinks of its own existence as being possible due to itself, it emanates a body for that sphere.<sup>22</sup>

Through a succession of emanations, this process continues until the ninth sphere or heaven and the Tenth Intellect, that is, the Active Intellect.<sup>23</sup> Somehow the chain of incorporeal intelligence comes to an end in the Active Intellect, which is the governor of the

20 Morewedge, *Metaphysica*, 77.

21 Avicenna, *Metaphysics*, trans. Marmura, 330–331.

22 *Ibid.*, 330.

23 Avicenna, *Metaphysics*, trans. Marmura, 325–326, 331; Davidson, *Alfarabi*, 76; Corbin, *Avicenna*, 61–62; Fakhry, *History*, 177; Nasr, *Islamic Cosmological Doctrines*, 203, 268; Nasr, *Three Muslim Sages*, 30; Afnan, *Avicenna*, 134; Netton, *Allah Transcendent*, 164; Heath, *Allegory*, 37.

material universe. It is an intellect from which no heavenly body can emanate, since it does not have enough energy or power to produce another tripartite division of intellect, soul, and heaven. The Active Intellect is the source of the prime matter (the different kinds of souls) namely the vegetative, animal, and the rational.

So far, it is clear that the relationship between the Necessary Being and the whole contingent universe is described in terms of the process of emanation. One might wonder how Ibn Sīnā classifies these intellects in the course of the cosmogonic unfolding of the universe from the One Necessary Being. How can an incorporeal Intellect, for example, the First Intellect, that is, the Supreme Archangel, be superior to the others in the hierarchy of being? According to Ibn Sīnā, the classification of these intellects in the hierarchy of being takes place according to the degree of their virtue or perfection, which is ultimately determined by their closeness to the Necessary Being.<sup>24</sup> Furthermore, in his cosmology, the bodies of the celestial Intellects are considered to be material entities which are “made of the element of ether.”<sup>25</sup> Unlike the elements of the sublunary world, the elements of the translunary bodies are not subject to generation and corruption. Their generation is necessary and eternal. The movement of the celestial bodies, that is, the circular motion, takes place according to the desire of their souls. Here, Ibn Sīnā makes a comparison between the celestial souls and human souls. The celestial souls (angels) are the principles (i.e., energies or forces) that give rise to the movements of the heavenly bodies, in the same way as the human souls are the principles (i.e., forces or forms) that cause the movements of our bodies. The source of the movement of the celestial bodies is the love, affection, or admiration of their soul for the Necessary Being. Due to this love and affection for the Necessary Being, each celestial soul reaches toward self-perfection. The perfection of the celestial soul produces the eternal circular motion of the celestial bodies.<sup>26</sup>

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24 Morewedge, *Metaphysica*, 76–77.

25 Nasr, *Islamic Cosmological Doctrines*, 237.

26 Morewedge, *Metaphysica*, 100–103; Nasr, *Islamic Cosmological Doctrines*, 237; Heath, *Allegory*, 37; Corbin, *Avicenna*, 73.

## The Conflicting Features between Ibn Sīnā's Doctrine of Emanationism and the Islamic Doctrine of Creationism

Ibn Sīnā's theory of emanation attracted the attention of medieval Muslim, Christian, and Jewish philosophers. I continue my discussion by considering problems in Ibn Sīnā's emanationist cosmology, cosmogony, and its influence on the Islamic world. Certainly, the most problematic features of the emanation process are its beginning and its final end. Perhaps the most immediate issue is the possibility of plurality in the universe, emerging from the unitary First Cause, which is the beginning of the hierarchy, and the idea of the Active Intellect as the source of the material world in the final stage of this process. These problems or difficulties in Ibn Sīnā's process of emanation must be discussed, but first, let us consider its echo in the Islamic world. There has been a long and continuous dispute among Muslim philosophers over the issue of whether Ibn Sīnā's theory of emanation should be considered a theory of creation or if it falls into a different category. In fact, the widely acclaimed creation theory, advocated by every monotheistic religion, is not as clear as it would seem. Both the Islamic and the Judaic account of the story of creation refer to something pre-existing. In Arberry's interpretation of the Qur'ānic passage 41:10–12, there is a suggestion, for example, that before the creation, heaven and earth were nothing but smoke.<sup>27</sup> Accordingly, some philosophers argued that there are indeed some Qur'ānic passages that could be taken to point to the existence of something before the creation of the world. Ibn Rushd, for instance, uses this to argue that God made things out of a pre-existing matter and to claim that theologians misunderstood this and imposed a doctrine of creation ex nihilo.<sup>28</sup>

Following in the tradition of Muslim and Jewish thinkers, Aquinas, for example, developed an analysis of the doctrine of creation ex nihilo, considered to be one of the enduring accomplishments of Western culture, and claimed that it is metaphysically coherent that the world be eternal at the same time. Even before Descartes, Aquinas himself argued that conservation and creation amount to the same

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27 A. J. Arberry, *The Koran Interpreted* (Oxford: Oxford University Press, 1964).

28 A. F. El-Ehwany, "Ibn Rushd," in *A History of Muslim Philosophy*, ed. Sharif, 2:547ff.

thing metaphysically.<sup>29</sup> Most of the theologians (*mutakallimūn*), both Ashʿarī and Muʿtazilī, insisted on God's omnipotence and unity: If God is omnipotent and one, only He created the universe and only He continues to create whatever comes into existence in it. Indeed, there are some Qurʾānic passages which could be taken to point to the existence of something out of nothing—God created the world in a free manner out of nothing. For example, God's act of creation is made absolutely clear in the following statement: *Is not He, who created the heavens and earth, able to create the like of them? Yes Indeed; He is the All-creator, the All-knowing. His command, when He desires a thing, is to say to it "Be," and it is.*<sup>30</sup> In some statements or verses, it is clear that the existence of the world and man are ascribed to an act of creation.<sup>31</sup>

The doctrine of creationism and a slightly different version of it (now commonly known as occasionalism) is clearly observable from the eighth century and onwards in the history of Islamic theology (*kalām*). For example, al-Ashʿarī and his followers were fascinated by the Qurʾānic conception of God. In the process of creation, al-Ashʿarī declared the absolute sovereignty of God's will, which was unknowable and completely free. In the course of the eighth century, the Muslim theologians (*mutakallimūn*) developed, as a reaction to Aristotelian physics, a cosmology and metaphysics that is based on theological grounds. They believed that the physics of Aristotle implies a necessary connection between natural events that fundamentally damages the conception of God's sovereignty in the universe.<sup>32</sup> In place of Aristotelian physics, they offered the metaphysics of atoms and accidents, according to which all sorts of creation in the universe take place as a result of the will and command of God. It is occasionally argued that this metaphysics of atoms and accidents in Islamic theology was adopted from Greek philosophy, in particular from Democritus. The influence of Greek

29 N. Kretzmann and E. Stump, eds., *Cambridge Companion to Aquinas* (Cambridge, 1993), 71–72.

30 Arberry, *Koran* (36:81–83), 455.

31 Arberry, *Koran* (32:5–9), 423 and (6:7–10), 212. See further, Morewedge, *Metaphysica*, 267–271. For a valuable discussion on this issue, see also Leaman, *Introduction*, 25–38.

32 For the denial of natural efficient causality by the *mutakallimūn*, see H. A. Wolfson, *The Philosophy of the Kalam* (Cambridge, MA: Harvard University Press, 1976), 518–578.

sources is possible. However, it must be noted that, unlike Democritus' atomistic theory, which is basically materialistic, the metaphysics of atoms and accidents in Islamic theology and philosophy functions in the opposite way; ultimately it leads to God's lordship or sovereignty in the universe. The majority of Muslim theologians believed that everything in the universe consisted of substance or atom (*jawhar*) and accident. The substance always exists together with its primary and secondary qualities (accidents). Through His command, if God wants to create an entity, first He creates the atoms, and then the accidents or qualities that constitute the physical as well as the biological natures of things. A created being continues to be, only if God constantly recreates its constituents, that is the atoms and accidents, at each individual moment of its duration.<sup>33</sup> Thus, the conception of "continuous recreation" becomes the most fundamental characteristic of the Islamic cosmological view of the universe.<sup>34</sup> Without hesitation, we can safely claim that all orthodox supporters of monotheistic faiths (i.e., *theologians*) uphold God's absolute omnipotence and His complete sovereignty in the universe. In this fundamental sense, the relation of God, the ultimate being, with the world is represented as a creation of the world *ex nihilo*. Certainly, the complete submission of the entire universe to the will of God was a significant force for the development of occasionalist philosophies in the Islamic philosophical tradition as well as in the European Cartesian philosophical tradition.

In the history of Islamic philosophy and theology, al-Ghazālī was the principle representative of the Islamic doctrine of creationism, that is, occasionalism. Al-Ghazālī attacked the Muslim Aristotelians and Neoplatonists, in particular al-Fārābī and Ibn Sīnā, who were the most influential and reliable commentators of Greek philosophy in the Islamic world. Having in mind the doctrine of

33 Cf. D. B. MacDonald, "Continuous Recreation and Atomic Time in Muslim Scholastic Theology," *Isis* 9 (1927), 326–344; Wolfson, *Kalam*, 468.

34 For its philosophical and theological implications, see Macdonald, "Continuous Recreation"; Fakhry, *Islamic Occasionalism and Its Critique by Averroes and Aquinas* (London: George Allen & Unwin, 1958), 22–56; Eliade Mircea, ed., *Encyclopedia of Religion* (New York: Collier Macmillan, 1987), 11:35. For a general view of the Muslim theologians on the conception of God and His creation, see Fakhry, *History*, 56–81; Watt, *Islamic Philosophy and Theology* (Edinburgh: University of Edinburgh Press, 1985), 58–72, 82–91; M. M. Sharif, *A History of Muslim Philosophy*, 2 vols (Wiesbaden, 1963), 199–244.

emanation, in Discussion 11 of the *Tahāfut al-falāsifa*, al-Ghazālī attributed to Ibn Sīnā the following view:

[Now,] according to you [philosophers], God enacted the world by way of necessity from His essence, by nature and compulsion, not by way of will and choice. Indeed, the whole [of the world] follows necessarily from His essence in the way that light follows necessarily from the sun. And just as the sun has no power to stop light and fire [has no power] to stop heating, the First has no power to stop His acts....<sup>35</sup>

At this point, al-Ghazālī has rightly criticized Ibn Sīnā by underlining the fact that such a Neoplatonic doctrine of emanation leads to a causal determinism in the universe. If we look at the issue from al-Ghazālī's point of view, in Ibn Sīnā's hierarchy of being an immaterial intellect produces another intellect through its act of contemplation of the Necessary Being. At the final stage of the hierarchy, with the aid of the circular motions of the heavens, the Active Intellect eternally and continuously emanates the prime matter, with its full potentiality for receiving all natural forms in the material universe.<sup>36</sup> The knowledge and will of the celestial intellects (agents) determines not only the movements of the spheres but also the natural events in the material universe. In the hierarchy of being, the perfection of an entity gives rise to another entity. Here there are two fundamental issues to which we must turn our attention: (1) the universe, spiritual or material, is the necessary production of the essence of the Necessary Being, and (2) the necessarily produced universe implies a necessarily connected material world in which every entity or event (i.e., effect) comes into existence as a result of its specific cause. Both of them imply determinism and therefore undermine the absolute omnipotence, complete sovereignty, and free will of God.

According to al-Ghazālī, one consequence of a necessarily produced world is a necessarily connected world. In Ibn Sīnā's

35 Al-Ghazālī, *The Incoherence of the Philosophers*, ed. and trans. M. E. Marmura (Provo, UT: Brigham Young University Press, 2000), 128.

36 For a discussion of the "first matter," see A. Hyman, "Aristotle's 'First Matter' and 'Avicenna's and Averroes' 'Corporeal Form,'" in *Essays in Medieval Jewish and Islamic Philosophy*, ed. Hyman (New York: KTAV Publishing House, 1977), 335-356.

emanationist worldview, the Tenth Intellect, that is, the Active Intellect, is the producer of the material world. It eternally and continually emanates first or prime matter, with its full capacity to receive the four elements out of which all creations come into existence. The cause of generation and destruction of all beings or events is the consequence of the composition and disintegration of these elements, which are fire, air, water, and earth. With the influence of the movements of heavens, the Active Intellect produces matter and imparts to each matter its proper form (which is in fact its power, force, or soul). Thus, everything in the material world functions according to its very nature. The nature of fire is necessarily to give off heat or burn, the nature of the sun is necessarily to produce light. Fire burns because of its internal nature, the sun produces light by reason of its internal activity. Al-Ghazālī rightly takes into consideration this issue, i.e., causality, in Discussion 17 of his *Tahāfut*. At the beginning of his discussion he writes:

The connection between what is habitually believed to be a cause and what is habitually believed to be an effect is not necessary, according to us. But [with] any two things, where “this” is not “that” and “that” is not “this,” and where neither the affirmation of the one entails the affirmation of the other nor the negation of the one entails negation of the other, it is not a necessity of the existence of the one that the other should exist, and it is not a necessity of the nonexistence of the one that the other should not exist—for example, the quenching of thirst and drinking, satiety and eating, burning and contact with fire, light and the appearance of the sun, death and decapitation, healing and the drinking of medicine, the purging of the bowels and the using of a purgative, and so on to [include] all [that is] observable among connected things in medicine, astronomy, arts, and crafts. Their connection is due to the prior decree of God, who creates them side by side, not to its being necessary in itself, incapable of separation.<sup>37</sup>

From the content of this passage we can surely claim that al-Ghazālī was the chief representative of the creation theory on

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37 al-Ghazālī, *Incoherence*, trans. Marmura, 166.

the basis of theological as well as logical grounds. In particular, his well-informed but highly critical account of the philosophers' ideas, especially Ibn Sīnā's conception of causality, reveals his position as creationist or occasionalist more clearly. Here, he expressly argues that there is no difficulty in admitting the notion of necessity in the realm of logical relations such as identity, implication, and disjunction. However, in the realm of pure natural relations, there is an adversity in accepting the concept necessity in so far as necessity cannot be observed to exist between a cause and its effect. In contrast to the order of thought, the order of nature contains only the contingent or empirical entities that are not connected with one another, except in our minds. In other words, in the realm of the physical world, the natural objects or events are not necessarily connected with each other; we only connect the ideas of those objects or events in our minds. In the external world, we observe that an object succeeding another or similar sets of objects is constantly or successively united to one another. However, our experience or observation does not prove the necessary connection between events or objects, but only succession or conjunction. Al-Ghazālī makes this absolutely clear in his famous examples:

As for fire, which is inanimate, it has no action. For what proof is there that it is the agent? They have no proof other than observing the occurrence of the burning at the [juncture of] contact with the fire. Observation, however, [only] shows the occurrence [of burning] at [the time of the contact with the fire] but does not show the occurrence [of burning] by [the fire] and [the fact] that there is no other cause for it...the father does not produce his son by placing the sperm in the womb; and that he does not produce his life, sight, hearing and seeing, and the rest of the [powers] in him. It is known that these [come to] exist *with* [the placing of the sperm], but no one says that they [come to] exist *by* it. Rather, they exist from the direction of the First, either directly or through the mediation of the angels entrusted with temporal things.<sup>38</sup>

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38 Ibid., 167.

In the order of natural relations, that is, cause and effect, the appearance of necessity is due to constant repetition of events or objects, which become conjoined only by the mind of the perceiver, but outside consciousness, events as such are not connected with each other. Therefore, causal necessity is only a habit of our minds. Al-Ghazālī puts it more clearly that “they are possibilities that may or may not occur. But the continuous habit of their occurrence repeatedly, one time after another, fixes unshakably in our minds the belief in their occurrence according to past habit.<sup>39</sup> So, it is clear that in the world of contingent beings, there is no room for logical necessity but only a psychological one.<sup>40</sup> Unlike logical necessity, the denial of psychological necessity is not self-contradictory. In nature, certain elements (e.g., fire) are given certain properties (e.g., the power to burn cotton). However, it is not logically contradictory to assume that fire may not burn since God or His angels have the capacity or will to remove this power from the fire, and therefore it may not cause burning in the cotton, or in the nature of cotton, God may create the power to resist the act of burning. Thus, it is not impossible to consider a miracle, for example, when Abraham was thrown into the fire, and the fire did not burn his body.<sup>41</sup>

At this point, it is important to *not* misunderstand al-Ghazālī. The philosopher does not, in fact, completely reject causality or the idea of necessity, as it is associated with the Neoplatonic emanation scheme of its distinguished philosophers. A created thing, that is, a natural cause, has a certain created nature which always gives rise to a certain or proper effect. Fire, using al-Ghazālī’s own example, possesses a certain nature as a created thing. Due to this nature, fire causes whatever is in contact with it to burn. Perhaps, one of al-Ghazālī’s most striking doctrines is that natural causes depend wholly on the will of God. By reason of that, a created thing (e.g.,

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39 Ibid., 170.

40 For al-Ghazālī’s account of “causality” see Fakhry, *History*, 256–259; Fakhry, *Islamic Occasionalism*, 56–78; Sharif, *History*, 614–616; Marmura, “Al-Ghazālī’s Second Causal Theory in the 17th Discussion of His *Tahafut*,” in *Islamic Philosophy and Mysticism*, ed. P. Morewedge (Delmar, NY: Caravan Books, 1981), 85–112.

41 According to the physical laws of matter, the nature of fire is to be hot. Fire burns because of its internal nature. But God has the ultimate power and will to remove this nature from the fire: *We said “O fire! be thou cool and (a means of) safety for Abraham”* (Qur’an, 21:69).

fire), owing to its own intrinsic nature, cannot be a *necessary cause* of a proper effect (i.e., burning cotton). In other words, the existence of fire in contact with cotton logically does not entail the existence of burning cotton. Natural causes like fire are only contingent causes. They possess their intrinsic natures through God's will. Their effects only proceed if the Creator wills and desires it. Thus, created things or natures can only be considered as provisional and inherently contingent causes. For their efficacy and very existence, the continuous cooperative power of God is always required. The divine acts of creation and of preservation are in reality identical in al-Ghazālī's view here. The same divine power and action are required to preserve any created being at each individual moment of its duration as would be needed to bring into being that object in a new form if it were previously in the state of nonexistence. It is the Divine Being, God, who continually creates in us the knowledge that He will perform these natures and causations. The knowledge that takes place through the habitual course of nature is accurate and certain, because that certain knowledge always comes by means of God, just as causality is only by means of God.<sup>42</sup>

Interestingly, one cannot fail to observe the striking similarities between al-Ghazālī's and Hume's accounts of the conception of causality.<sup>43</sup> In this regard, comprehensive research needs to be undertaken on the education and philosophy of Hume, and whether

42 For a clear exposition of al-Ghazālī's preferences, see I. Alon, "Al-Ghazālī on Causality," *JAOS* 100, no. 4 (Oct.–Dec. 1980), 397–405; L. Goodman, "Did al-Ghazali Deny Causality?" *Studia Islamica* 47 (1978) 83–120. For a careful study of al-Ghazālī's relation to Ibn Sinā, see also R. Frank, *Creation and the Cosmic System* (Heidelberg: Carl Winter, 1992). Furthermore, the sophisticated work of R. Frank, *Al-Ghazālī and the Ash'arite School* (Durham, NC: Duke University Press, 1994) shows that *kalām* metaphysics of occasionalism was more advanced than oftentimes thought. In particular, he demonstrates that it is a native Islamic philosophical theology of considerable intellectual strength, and argues that al-Ghazālī is in many ways closer to Ibn Sinā than to the Ash'arī on a number of topics, including causality.

43 See Hume, *A Treatise of Human Nature*, ed. L. A. Selby-Bigge and rev. ed. P. H. Nidditch (Oxford: Oxford University Press, 1978), 87–94. Having in mind the nature and purpose of al-Ghazālī's attack on philosophy, in particular causality, Julius R. Weinberg states: "This attack on philosophy is a very remarkable work. Its earliest modern students recognized the similarity of al-Ghazālī's critique of causality with that of the French Occasionalists and Hume." See Weinberg's book, *A Short History of Medieval Philosophy* (Princeton, NJ: Princeton University Press, 1964), 122.

or not he was familiar with the works of al-Ghazālī. Without doubt, we can safely state that al-Ghazālī critically analyzed the concept of causation and its implications long before Hume did. A close examination of al-Ghazālī's ideas on causation in his masterpiece, *al-Tahāfut*, clearly demonstrates that there is indeed little new and original in Hume's account of causation. The central difference is that al-Ghazālī replaces natural causality with the complete sovereignty and absolute omnipotence of God in the universe, that is to say, Divine Causality; while Hume left us with a set of purely contingent natural events. Along the same lines as al-Ghazālī, Descartes too was in favor of a conception of unconstrained Divine Will in his account of the origin and structure of reality in the universe. This recognition of divine causality made his philosophy, especially his cosmology, more akin to that of al-Ghazālī than Ibn Sīnā.<sup>44</sup>

According to Ibn Sīnā, everything in the universe emanates from the self-apprehension of the essence of the Necessary Being. The process starts with the First Intellect, which produces three distinct ontological entities by reason of its three distinct objects of thought. And it terminates with the Active Intellect, which gives rise to the material world and its phenomena. The most striking feature of this process is its inevitable or necessary nature: through His act of intellection of its existence, the Necessary Being eternally and necessarily emanates the First Effect, that is, the First Intellect, which in turn produces other immaterial Intellects through its contemplation of the First Cause. Ibn Sīnā has made the issue even harder for himself by insisting that everything emerges from the essence of the Necessary Being; the process of emanation is supposed to explain the whole reality by appealing to the analogies of fire and heat, sun and light, and so on. Yet these are examples of a physical process which presumes that a substance (e.g., the sun) produces secondary activity (e.g., light) by reason of its internal activity. In other words, this theory argues from the fact that every living entity, when it reaches maturity or perfection, produces another entity. Likewise,

44 Scholars have pointed out a close similarity between the philosophy of Spinoza and that of Ibn Sīnā. It is stated that "Ibn Sīnā's influence on Spinoza through Maimonides is noticeable in his [Spinoza's] view that in God intelligence, intelligent, and intelligible are identical, and so are essence and existence, while in created beings existence is an accident super-added to essence." See Sharif, *History*, 2:1384. See also O. Amin, "The Influence of Muslim Philosophy on the West," *Iqbal* 8, no. 3 (January 1960), 2.

the absolute perfection and the absolute goodness of the Necessary Being are the ultimate source of the realization of the other entities in the universe. Perhaps the analogy of the sun and its light gives us some understanding into part of the process of emanation, but it does not sufficiently explain the relationship between the universe and God. How can the structure of the causal activity of living beings, that is to say, the way a substance produces another entity as a result of its perfection, be applied to the spiritual realities like Divine Being and celestial intellects outside the material world? Ibn Sīnā himself seems to realize the problems with the process because he argues that the “Necessary Being is not a substance, like the sun, which possesses a subject-matter.”<sup>45</sup>

In fact, the main problem arises from the inevitable nature of the causal agency. The absolute perfection and the absolute goodness of the Necessary Being eternally and necessarily give rise to the generation of the First Intelligence, which in turn produces other immaterial Intellects until the Tenth, the Active Intellect, in the hierarchy of beings. In a similar manner, the Active Intellect eternally and necessarily emanates the matter of the physical world and implants into each matter its own proper natural forms, including the souls of plants, animals, and human beings. The necessarily connected world gives rise to another necessarily connected world, and their authors act out of necessity. But, for al-Ghazālī, the belief in an involuntary and inevitable causal agency or principle undermines the absolute omnipotence and complete sovereignty of God in the universe. The principle of causal effectiveness must be a free agent. God must act by choice and will, but not out of necessity.

One wonders whether the concept of emanation and that of creation can be used interchangeably. There appear to be continual disputes among scholars about this issue. Nasr, a distinguished expert of Islamic philosophy, in Part 3 of his well known work, *An Introduction to Islamic Cosmological Doctrines*, argues that “Ibn Sīnā uses four words to designate the creation or generation of the Universe.” He expresses the meaning of these words as follows:

“*ihdāth*—production of contingent beings, whether they be eternal or temporal.

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45 Morewedge, *Metaphysica*, 59–60.

*ibdāʿ*—production without intermediary of incorruptible and eternal beings, whether they be corporeal or not.

*khalq*—production, with or without intermediaries, of corporeal beings, whether they be corruptible or incorruptible.

*takwīn*—production with intermediaries of corruptible beings.<sup>46</sup>

After that, he continues to give an account of the manifestation of the universe in Ibn Sīnā's cosmology in the following manner:

According to Ibn Sīnā, creation itself is intellection by God of His own Essence. It is this intellection (*taʿaqqul*) and the knowledge (*ʿilm*) of His own Essence that brings all things into being. This act of intellection is eternal (*lā yatanāhā*), and the manifestation of the Universe is God's eternal knowledge of Himself. Creation is at the same time 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. In some of Ibn Sīnā's more esoteric works, in fact, God is identified with the source (*al-manbāʿ*) of the overflowing of light (*fayāḍān al-nūr*) which fills all things. So, one can say that Creation is the realization of the intelligible essences and existence the theophany (*tajallī*) of these essences, so that being and light are ultimately the same. To give existence to creatures is to illuminate them with the Divine Light which is the same as His Being.<sup>47</sup>

In fact the whole picture is summed up with great clarity in Part 1 of another work by Nasr, entitled *Three Muslim Sages*:

The process of creation, or manifestation, is closely tied to the function and significance of the angel, for the angel is the instrument through whom the act of creation is achieved... *The process of creation, or the giving of existence, and that of intellection are the same* because it is through the contemplation of higher orders of reality that lower ones come into being.<sup>48</sup>

46 Nasr, *Islamic Cosmological Doctrines*, 212–213.

47 *Ibid.*, 213.

48 Nasr, *Three Muslim Sages*, 29. Emphasis added.

In the course of his exposition of Ibn Sīnā's position in these passages, Nasr appears to use the words 'creation,' 'manifestation,' 'generation,' and 'production' interchangeably. He claims the process of creation, or manifestation, or giving of existence and that of intellection to be identical things. In particular, here he draws our attention to the idea that the divine act of creation, and that of intellection are not two different things, but exactly the same (or the same act). Although Plotinian influence on Ibn Sīnā's cosmology is mentioned there,<sup>49</sup> it appears that Nasr does not prefer to use the word 'emanation.' From this, I am not in a position to claim that, for him, creation is like emanation. To be sure, as a highly respected commentator of Islamic philosophy, Nasr is well aware of the fact that creation and emanation are two different models which account for the existence of the cosmos.

But this gave the opportunity to some critics to judge him seriously. In his book entitled, *The Metaphysica of Avicenna (Ibn Sīnā)*, Parviz Morewedge argues that "Nasr's exposition of Ibn Sīnā's doctrine is representative of those who claim to find a marked affinity between the creation theory and Ibn Sīnā's doctrine."<sup>50</sup> Morewedge even goes so far as to claim that "creation, according to Nasr, is like emanation."<sup>51</sup> He discusses the meaning of the conception of emanation and that of creation by criticizing Nasr's position as follows:

The key word in Nasr's description of God's creation of the world is "production." In disagreement with Nasr, we wish to point out that there is a difference between "producing something out of nothing" and "producing something by emanation from one's thought." In the latter case, there is a resemblance between the agent and the product; this resemblance is not to be found in the first case. Whereas the Islamic God produced the world *ex nihilo*, in Ibn Sīnā's philosophy we find the explicit assertion that the Necessary Existent does not produce the world in such a manner, but that first intelligence emanates from it (*padid āmadan*). Consequently, the

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49 Nasr, *Three Muslim Sages*, 29.

50 Morewedge, *Metaphysica*, 271.

51 Ibid.

view that Ibn Sīnā upholds the creation theory is open to serious objection.<sup>52</sup>

When we compare the basic feature of the Islamic creation theory with Ibn Sīnā's doctrine of emanation, there are clearly fundamental differences between the two. Inevitably, such an emanationist worldview implies, more or less, that God has no immediate or direct power in creating the universe out of choice and Free Will. In the doctrine, a one-to-one connection between Divine Being and created beings is already ruled out. But Islamic thought insists on the belief that the entire universe is the free creation of God, who neither stands to gain anything by creating it, nor requires anything in order to bring into being it. At all times, the Divine power and action are required not only to create things anew—either in a free manner out of nothing (*ex nihilo*) or in a manner out of some created particles—but also to preserve these things at each individual moment of its duration. Thus, God creates the universe through His own free will and choice, and is therefore always conscious of His creation without appealing to any intermediary. Moreover, the Islamic view strongly supports the belief that the operation of the universe takes place according to the basic laws of physics, which are ultimately dependent on the free will of God. Nature is permitted or allowed to function through a causal nexus only on the basis of God's free will and choice. God is capable of intervening in events in the universe at any moment, whenever He intends to do so. The created world has a consistency associated with causes and effects as we observe them. When we give an explanation of natural phenomena, we make use of them. But, according to Ibn Sīnā, God especially is not involved in the process of creation and destruction of specific events or objects in the material world, but has knowledge of events in a universal manner.<sup>53</sup> Everything in both celestial and terrestrial realms is generated through intermediaries. Al-Ghazālī and Descartes, as we shall see later on, are philosophers whose theories fall more readily into the category of creation than do those of Ibn Sīnā.

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52 Ibid., 272.

53 See Fakhry, *History*, 255–256; M. E. Marmura, “Some Aspects of Avicenna's Theory of God's Knowledge of Particulars,” *JAOS* 82 (1962), 299–311; F. Rahman, “Ibn Sīnā” in *History*, ed. Sharif, 501–503; Leaman, *Introduction*, 108–120.

By claiming that all contingent beings emanate from the unitary First Cause, Ibn Sinā made the issue a good deal harder for himself, than if he had invoked the exclusive efficacy of God, whose direct intervention in the events of nature might explain the emergence of the universe. Here, the philosopher might have considered the possibility that each and every event in the causal nexus, falling under the general laws by which the universe is governed, takes place by virtue of the power and direct will of God. One cannot fail to observe an “apparent contradiction” between Ibn Sinā’s cosmology and ontology.<sup>54</sup> On the one hand, in his ontology he conceives of an ultimate Being, who is one, eternally present and transcendent with regard to all other contingent beings in the universe,<sup>55</sup> while on the other hand, in his cosmology he attempts to explain the emergence of the whole universe from this perfect and transcendent Being by appealing to the process of emanation. The relationship between the transcendent Being and the continually emanated universe has been established somehow with the aid of the First Intellect. Without the function of the First, or Universal Intellect, Ibn Sinā faced great difficulties in connecting the universe with its ultimate source. Netton, decisively I believe, underlined the inadequacy of the process of emanation to account for the existence of the universe from the One. He states:

But mere description of the way in which the emanation process takes place, by intellection, does not explain immediately *how* the gulf between transcendence and the rest of the world is bridged: it merely states the mechanics of emanation. To say the world of beings is eternally emanated from The One, and thus co-eternal, does not help either, because the world is not utterly transcendent like the necessary One who does not emanate His own transcendence.<sup>56</sup>

The cosmology of Ibn Sinā clearly brings the transcendent Being, God, into the cosmos. For, the whole contingent universe, spiritual or material, is nothing but a manifestation of that Perfect Being. As already noted, the relation of the universe to God is

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54 Nasr, *Islamic Cosmological Doctrines*, 212.

55 Ibid., 202; Nasr, *Three Muslim Sages*, 24–25; Netton, *Allah Transcendent*, 167.

56 Netton, *Allah Transcendent*, 167.

explained in terms of the relation of light to the Sun.<sup>57</sup> The universe is an effusion or illumination of the Perfect Being, God, just as the light is an illumination of the Sun. The “degree of reality, beauty, and goodness” of an object in the universe is ultimately determined by its closeness to God.<sup>58</sup> Ibn Sīnā’s conception of the cosmos as an effusion of the Perfect Being had supporters among Muslim mystics (*sūfīs*) such as Ibn al-‘Arabī, who was the chief representative of the doctrine of the “Unity of Being” (*waḥdat al-wujūd*). But in general, Muslim theologians, particularly al-Ghazālī, attacked Ibn Sīnā because his cosmology undermined the belief in an absolute distinction between the creation and the Creator as well as God’s act in choice and will in the universe. Perhaps emanationist cosmology can be accepted on the mystical level in the sense that “orders of reality” (that is to say, the laws of physics by which the whole universe is governed) are nothing but a complete manifestation of the Perfect Being. “The best possible world order (*niẓām*),” that is the general laws of physics, is identified with the will of the Perfect Being, God. However, such a cosmological system, which leads us to the “Unity of Being,” does not seem to be reconciled with an ontological system in which a sharp distinction is made between the creation and the Creator, God, who is transcendent with regard to all other contingent beings in the universe. It appears that there is no simple solution to the relationship between the transcendent Being and the reality of the universe. If Ibn Sīnā would like to keep God’s Being “beyond” all possible being,<sup>59</sup> he would have done better to have chosen the doctrine of creation (*ex nihilo*), as strongly represented by many mainstream philosophers of religion, including al-Ghazālī and Descartes. The universe is likened to a machine whose operations take place automatically in accordance with the laws of matter in motion—the basic laws of nature or physics. The uniform laws of motion operate in virtue of the power and constancy of the Divine Power, God. Here, the divine creative power is invoked as the ultimate cause of the quantity of motion in the universe. But, according to interpreters of the Cartesian system, once the laws of motion have been laid down in the universe, little reference is made to God.

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57 Nasr, *Islamic Cosmological Doctrines*, 202.

58 *Ibid.*, 201–202.

59 *Ibid.*, 202.

## Cartesian Cosmology: The Idea of Creation

To be sure, the doctrine of emanation is not the only way in which the relationship between the plural universe and the Necessary Being can be presented. Another alternative solution to the problem of how a plural universe can be generated from, and relate to the Divine Being, is the doctrine of creation, of which Rene Descartes was a notable representative in seventeenth-century European philosophy. As with Ibn Sīnā, one of the greatest ambitions of the French philosopher was to give a clear explanation of the origins and structure of the universe. In chapter 6 of his *Le Monde* (*The World*), Descartes lays out the general physical characteristics of a new kind of universe, which he labeled as an “imaginary new world.” In contrast with the elaborateness and complexity of Ibn Sīnā’s cosmology and schema of emanation, this new kind of Cartesian cosmology possesses not only the characteristic of “simplicity,” but also “homogeneity.” In other words, according to Descartes, matter (*res extensa*), that is, the all-pervasive substance, is specially created by God so as to constitute and fill the entire universe and in the nature of this matter “there is absolutely nothing that everyone cannot know as perfectly as possible.”<sup>60</sup> In addition, God specially created the basic laws of physics by means of which the universe operates like a machine in an uniform and regular order. In contrast to Ibn Sīnā, Descartes does not adopt a kind of Neoplatonic theory of “emanation” in order to explain the perceivable and the invisible realities of the universe, but rather adopts the doctrine of “creationism,” in the same way al-Ghazālī does. In the Cartesian universe, God as a Perfect Being, “creates” the rest of the reality out of His direct intervention, free will and choice. In *Le Monde*, Descartes states this more clearly in the following passage:

For God has established these laws in such a marvellous way that even if we suppose he creates nothing beyond what I have mentioned, and sets up order or proportion within it but composes from it a chaos as confused and muddled as any the poets could describe, the laws of nature are sufficient to cause the parts of this chaos to disentangle themselves and arrange themselves in such good order that they will have the form of a quite

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60 Descartes, AT XI 33; CSM I 90.

perfect world—a world in which we shall be able to see not only light but also all the other things, general as well as particular, which appears in the real world.<sup>61</sup>

It is clear from the text that Descartes begins his project directly with the construction of the “quite perfect world,” despite the fact that he introduces the structure of this world as “a fable.” But one can be absolutely sure that the “principles” or the “laws” that are envisaged by Descartes as existing in this imaginary “new world” are the ones by means of which the real universe is in fact considered to be operating. Over and above its simplicity, the Cartesian cosmology is fundamentally identified with it mechanically: in the same way a mechanical device operates, the operations of the universe take place in accordance with the laws of matter in motion. In other words, mathematical and physical laws govern the behavior of matter in motion. But such a vision does not suggest the idea that the Cartesian universe does dispense with God, in the same way as Aristotle’s cosmos, since He has absolutely no role in the operations of the universe. God surely is not displaced in the Cartesian cosmology. Indeed, both in *Le Monde* and *Principles of Philosophy* Descartes often emphasizes that the uniform laws of motion functioning in the matter of the entire universe always require the continuous “co-operative” power and constancy of God.<sup>62</sup> Thus, God is not only the direct cause of the existence of the universe, but also of the laws of physics controlling the behavior of matter in motion. For He has created a space that is infinite in spatial extent and filled it with all-pervasive extended substance that must obey these immutable basic laws of physics. Certainly Ibn Sīnā would agree with Descartes on the idea that the corporeal substance out of which the material universe is made up must obey the basic laws of physics. But he would have been unwilling to accept Descartes’ claim that God is the direct cause of the material world and the laws of matter in motion. For the matter constituting the sublunary world and the laws of nature are emanated and imparted externally by the causes—celestial intelligences, in particular the Active Intellect—leading back ultimately to the Self-sufficient Cause. In this sense, the Necessary Being in Ibn Sīnā’s emanationist cosmology is a remote cause of the

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61 Descartes, AT XI 34; CSM I 91.

62 Descartes, AT VIII A 61; CSM I 240, AT XI 34; CSM I 91.

material universe and the laws governing this world. This suggests that the operation of the physical universe takes place in accordance with the basic laws of physics, that is, for Ibn Sīnā, the substantial or natural forms, exist independently of the direct intervention of the Necessary Being but through the agency of the Active Intellect.

While Ibn Sīnā's cosmology is closely associated with his ontological and metaphysical predilections, Descartes seems to be determined to make his cosmology subordinate to physics. For the general physical characteristics of the universe can only be apprehended by means of an independent physics that must ultimately be based on mathematical principles rather than theological and metaphysical doctrines. Indeed, the modern and autonomous scientific developments in the seventeenth-century shed a fresh light on a number of crucial cosmological concepts and issues that had been obscure up to that time. With the progress of science, the traditional geocentric conception of the universe, for instance, utterly lost its credibility and Descartes, in his new cosmological system, implicitly rejected it. As will be remembered from the history of science, Galileo, with the aid of a telescope that he invented, supported the heliocentric conception of the universe, that is, the Copernican theory, which holds that the planets move about the sun as their common center. Clearly, this idea openly conflicted with the traditional teaching that had its roots in Aristotle and the Bible, scholastic philosophers and the Catholic Church. As soon as it was realized that his treatise, *The Dialogue Concerning the Two Chief World Systems: Ptolemaic and Copernican* (1632) was in fact a defense of the heliocentric system, Galileo was condemned by the Roman Inquisition in 1633 for heresy. To be sure, such a historical event caused great anxiety among scientists during that period and Descartes in particular canceled the publication of *Le Monde*, in order to avoid the hostility of the theologians. Subsequently, and despite his cautious attitude towards the Copernican theory as he expressed it earlier in the *Principles of Philosophy*,<sup>63</sup> Descartes later made it clear that he, too, was as committed to this view as Galileo. In connection with this matter he wrote:

Let us thus put aside all worries regarding the earth's motion, and suppose that the whole of the celestial

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63 Descartes, AT VIII A 85–86; CSM I 250–51.

matter in which the planets are located turns continuously like a vortex with the sun at its centre. Further, let us suppose that the parts of the vortex which are nearer the sun move more swiftly than the more distant parts, and that all the planets (including the earth) always stay surrounded by the same parts of celestial matter. This single supposition enables us to understand all the observed movements of the planets with great ease, without invoking any machinery.<sup>64</sup>

It is clear from these remarks that Descartes is not in favor of the traditional geocentric conception of the universe. The scholastic philosophers, who took their inspiration from Aristotle and the Catholic Church, had earlier believed that the earth is the center of the universe, and therefore, things contained in it are specially created and organized for the specific benefit of humankind. But for Descartes and other scientists such as Galileo and Bacon, such purposive (i.e., final cause or teleological) explanations of things were nothing more than a hindrance to the development of scientific inquiry into the origins and structure of the universe. In the light of new developments in science, Descartes firmly argued that the universe itself consists of an infinite number of worlds, since it is indefinitely large<sup>65</sup> and the earth is only one of those possible worlds that might contain intelligent creatures. Thus, it is absurd to think that everything in the universe is solely created for the sake of humankind. In the *Principle of Philosophy* he proclaims that

it is wholly improbable that all things were in fact made for our benefit, in the sense that they have no other use. And in the study of physics such a supposition would be utterly ridiculous and inept, since there is no doubt that many things exist, or once existed, though they are now here no longer, which have never been seen

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64 Descartes, AT VIII A 92; CSM I 253–254.

65 The term “indefinite” should not be confused with the term “infinite.” Although the former is specially used by Descartes to describe the immensity of the cosmos, the latter is only employed to the Divine Being. See Descartes, AT VIII A 15; CSM I 202.

or thought of by any man, and have never been of any use to anyone.<sup>66</sup>

Here, if we reflect on these remarks, it is interesting to note that there appears to be an important difference between the cosmologies of Ibn Sinā and Descartes. Although Ibn Sinā's cosmology was at heart orientated toward the Neoplatonic theory of emanation and made use of a number of Aristotelian modes of expression, for example, celestial and terrestrial worlds, matter and form, actuality and potentiality, the four elements and their forms, and so on, the Cartesian cosmology was specially designed to distance itself from the constraints of the ancient, scholastic, and theological doctrines. For according to Descartes, the true nature and structure of matter, or corporeal substance, of which the entire universe is constructed, can only be apprehended through an *autonomous science* or *physics*, which must be based solely on *mathematical principles* rather than the abstract categories of the classical and scholastic traditions and the metaphysical and ontological predilections of individuals. A close study of the basic laws of physics that govern the behavior of matter in motion provides us the factual knowledge of the entire universe.<sup>67</sup>

Nevertheless, such a mechanical approach to the operation and the structure of the universe does not supersede God. In fact, God plays important roles in Cartesian physics. In the first place, God's creative power is required for the existence of the all-pervasive extended substance (*res extensa*) out of which the entire universe is constructed.<sup>68</sup> Over and above this, once things are created, the "concurrence of God," that is to say, "the continuous divine action" is indispensable for the preservation of those created beings in existence. In his *Synopsis* of the following six meditations, Descartes makes it clear that "we need to know that absolutely all substances, or things which must be created by God in order to exist, are by their

66 Descartes, AT VIII A 81; CSM I 248–249. See also Descartes' letter of 6 June 1647 to Chanut, AT V 55–56; CSMK 321–322.

67 Jonathan Rée is surely correct in his assertion that "Cartesian physics offered what seemed to be a completely new type of scientific examination. Whereas traditional systems of scientific explanations had been based on abstract categories like animality and rationality, the Cartesian system promised to explain physical phenomena in far more concrete terms—"without needing to postulate anything in matter other than the movement, size, shape and arrangement of its parts," see Rée, *Descartes* (New York: Pica Press, 1975), 46.

68 Descartes, AT VIII A 24–26; CSM I 209–211.

nature incorruptible and cannot ever cease to exist unless they are reduced to nothingness by God's denying his concurrence to them."<sup>69</sup> The notion of God's concurrence is important here. The term "divine concurrence" seems to refer to the *consent of God* in the continuation of things in the universe—God approves the continuation of things in accordance with their own principles, laws, or forces. However, in the third meditation Descartes makes no distinction between the divine acts of preservation and of creation, claiming that

it is quite clear to anyone who attentively considers the nature of time that the same power and action are needed to preserve anything at each individual moment of its duration as would be required to create that thing anew if it were not yet in existence. Hence the distinction between preservation and creation is only a conceptual one, and this is one of the things that are evident by the natural light.<sup>70</sup>

Furthermore, in Cartesian physics, the concurrence of God is essential in the process of the creation and the conservation of motion in the universe. The universe is in motion due to the creative power of God. Formally, although Descartes categorizes motion as a "mode" of extended substance (*res extensa*), he seems to be aware of the fact that it cannot simply be derived from the definition of matter as a thing possessing the characteristics of extension in length, breadth, and depth. In Part 2 of the *Principles*, Descartes clearly appeals to the divine creative power for the origination of a dynamic universe:

First, there is the universal and primary cause—the general cause of all the motions in the world; and second there is the particular cause which produces in an individual piece of matter some motion which it previously lacked. Now as far as the general cause is concerned, it seems clear to me that this is no other than God himself. In the beginning <in his Omnipotence> he created matter, along with its motion and rest; and now, merely his regular concurrence, he preserves the same

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69 Descartes, AT VII 14; CSM II 10.

70 Descartes, AT VII 49; CSM II 33.

amount of motion and rest in the material universe as he put there in the beginning.<sup>71</sup>

In a fundamental sense, it is clear from the quoted passage that for Descartes, the real and direct Agent is actually God, who voluntarily creates and operates in all the phenomena of the universe. God's creative power is described as "a single identical and perfectly simple act by means of which he simultaneously understands, wills and accomplishes everything."<sup>72</sup> At this point, it is exciting to note that the process of creation envisaged by Descartes is, in essence, compatible with the Islamic doctrine of creation that is essentially based on the God's sovereignty, omnipotence, and uniqueness. The Qur'ān offers many passages which support the thesis that the only ultimate being is God, who at once apprehends, wills, and creates all things through a unique timeless act.<sup>73</sup>

In the history of Islamic philosophy and theology, al-Ghazālī, who follows the theistic and voluntaristic metaphysics of the Ash'arī tradition, strongly supports the creation theory on the basis of the divine revelation. He launches a profound attack on Ibn Sīnā's deterministic doctrine of emanation and argues that his assertion of creation is pure deception and venality. The emanation process in question does not allow the voluntary act of God in the process of the generation of the universe. In the *Tahāfut* al-Ghazālī draws our attention to this point:

Agent is an expression [referring] to one from whom the act proceeds, together with the will to act by way of choice and the knowledge of what is willed. But, according to you [philosophers] the world [proceeds] from God [exalted be He] as the effect from the cause, as a necessary consequence, inconceivable for God to prevent, in the way the shadow is the necessary consequence of the individual and light [the necessary consequence] of the sun... The agent, however, is not called an agent and a maker by simply being a cause, but by being a cause in a special respect—namely, by way of will and choice.<sup>74</sup>

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71 Descartes, AT VIII A 61; CSM I 240.

72 Descartes, AT VIII A 14; CSM I 201.

73 See, for instance, Qur'ān, 36:77–82.

74 al-Ghazālī, *Incoherence*, trans. Marmura, 56.

There is no doubt that al-Ghazālī is in favor of a dynamic and occasionalistic worldview. For the philosopher believes that God is the only real and direct cause of both the existence and the sustenance of the universe. The occurrences of events in nature are due to the direct intervention, exclusive efficacy, and the free will of God. Without the concurrence of God, nothing in the universe functions and comes into existence. It is by reason of the creative power, the continuous co-operation and the consent of God, that nature or the universe operates in accordance with its own principles, or basic laws of physics. In his assessment of al-Ghazālī's view, M. Saeed Sheikh states that "Nature seems to be pervaded by a causal nexus only because as a rule God does not choose to interrupt the continuity of events by a miracle; it is possible, however, that He might intervene at any moment that He deems fit."<sup>75</sup> At heart, al-Ghazālī's view gives credence to the thesis that if God could not choose to intervene in the phenomena of nature, then He could not be said to be truly omnipotent.<sup>76</sup>

In comparison with the thought of al-Ghazālī, Ibn Sinā's doctrine of emanation certainly suggests a deterministic worldview, and creates an unbridgeable gap between the Creator and the rest of the world, in particular the world in which we human beings live. For the theory under consideration holds that the universe has proceeded from God only through "the intermediaries," by necessity, but not created by Him all at once by choice. In the series of emanations, God is directly related only to the First Intellect (*al-ʿAql al-Awwal*), the Supreme Archangel, or Cherub, that is the agent by means of which the other celestial intellects, spheres, and finally the whole material world is produced. In this schema, the sublunary world has no direct relation, only through the intermediaries, to the Necessary Being, or God. It would be better to say that the generation and corruption, the uniformity and diversity within the sublunary world are directly related or attributed to the creative power of the Tenth Intellect, that is, the Active Intellect, the lowest end of that celestial succession. One of the implications of a necessarily produced universe is a necessarily connected sublunary world. That is, the intellectualist and emanationist metaphysics of Ibn Sinā make the sublunary world a "completely autonomous" system in comparison

75 Sharif, *History*, 2:616.

76 al-Ghazālī, *Incoherence*, trans. Marmura, 166–177.

with the system of al-Ghazālī. No reference is made to God in the sublunary world, but rather the structure and the operation of natural phenomena are explained in terms of “causal necessity,” which pervades the entirety of nature in Ibn Sīnā’s worldview. And this has little in common with the Islamic doctrine of creation that is fundamentally based on providence and omnipotence of God.<sup>77</sup>

In the third discussion of the *Tahāfut*, al-Ghazālī makes it clear that although the philosophers, in particular al-Fārābī and Ibn Sīnā, who are the representative of the Aristotelian and Neoplatonic tradition within the Islamic world, claim to be believers in Islam by maintaining that God is the creator of the world, their assertion is true only in a figurative or metaphorical sense, and their position is not in harmony with the traditional Islamic doctrine of creationism.<sup>78</sup> According to al-Ghazālī, God preforms the act of creation of His own free will and with full knowledge of His act. Moreover, there is always the possibility of the occurrence of miracles in nature, since God is omnipotent, and thus the law of causal necessity might not be the only way in which things are explained.<sup>79</sup> In the universe, there is realization *ex nihilo*, that is to say, production must mean the transition of an object from nonexistence to existence and destruction is the transition of an object from existence to nothingness. Ibn Sīnā’s doctrine of emanation is rejected by al-Ghazālī by reason of its denial of these things that are so fundamental to the Islamic doctrine of creation.<sup>80</sup>

As a matter of fact, al-Ghazālī is a strong supporter of the “dynamic-occasionalistic worldview,” whose main inspiration was the “theistic-voluntaristic metaphysics of the Ash‘arite tradition.”<sup>81</sup> In the history of Islamic thought, the Ash‘arī tradition placed great weight on the omnipotence of God and thus leaves no room for the natural efficacy of secondary agents in the creation and the operation of the spiritual and material phenomena of the universe.<sup>82</sup>

77 Sharif, *History*, 2:601–616; Fakhry, *Islamic Occasionalism*, 56–78; Fakhry, *History*, 244–261.

78 al-Ghazālī, *Incoherence*, trans. Marmura, 55.

79 *Ibid.*, 173–177

80 *Ibid.*, 52–53.

81 Sharif, *History*, 2:614.

82 See M. Abdul Hye, “Asharism,” in *History of Muslim Philosophy*, ed. Sharif, 220–243.

In his occasionalistic statements Descartes held to a voluntaristic conception of Divine Will that made his occasionalistic philosophical and cosmological system closer to that of al-Ghazālī than to that of Ibn Sīnā.<sup>83</sup> In fact, Spinoza's non-voluntarism is more akin to the deterministic thesis of Ibn Sīnā.

Certainly, there are textual passages in which Descartes, like al-Ghazālī, seems to commit himself to the view that God is the sole ultimate cause of everything that takes place in the universe—and thus to occasionalism.<sup>84</sup> This theme is well expressed in a letter written by Descartes to Princess Elisabeth on 6 October 1645, as follows:

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83 Descartes was sometimes an occasionalist, sometimes an interactionist, and sometimes a determinist or mechanist. Placing him in one of these categories depends on the text under consideration.

84 Majid Fakhry states that "Occasionalism can be defined as the belief in the exclusive efficacy of God, of whose direct intervention the events of nature are alleged to be the overt manifestation or 'occasion.'" See his *Islamic Occasionalism*, 9. Occasionalism is generally understood as the belief that every occurrence in the causal link is an effect whose only real and direct cause is the will of God. From the beginnings of the ninth century and onwards, the Ash'arī *mutakallimūn* had a special place in the history of Islamic thought and philosophy for the development of this worldview in their occasionalist metaphysics of atoms and accidents as a reaction to the pagan worldview. They believed that atoms (*juz'*), that is, substances (*jawhar*) and their qualities, from which the world is made up, at each individual moment come into existence from nothingness and go out of existence by the continual concurrence and will of God, who is the ultimate source of all reality in the universe. The idea of the "continuous re-creation" constitutes the fundamental basis of their cosmology. There is no doubt that in the Islamic world the greatest defender of the occasionalist worldview was al-Ghazālī, against the views of those who undermined the fundamental tenets of Islamic religion. He was more determined than any of his Ash'arī predecessors to show the incompatibility of Greek thought with the basic principles of Islam and devoted his whole companion book *al-Tahāfut* entirely to this purpose. For Islamic occasionalism and its theological implications, see Macdonald, "Continuous Recreation," 326–344; Macdonald, *Development of Muslim Theology, Jurisprudence and Constitutional Theory* (New York: Charles Scribner's Sons, 1926). In seventeenth-century Europe the occasionalist trend of thought emerged with Descartes, the craftsman of modern philosophy in the West; upon him al-Ghazālī had a profound influence at least through Jewish, Christian, and Latin scholastics, or so it is believed by many scholars. Although Descartes himself never mentions any of the Muslim thinkers by name in his writings, it is impossible to believe that he was never acquainted with any of their works, especially with those of al-Ghazālī, most of which had been translated into Latin before the middle of twelfth century and were already available in European libraries. See further, Sharif, ed., *History of Philosophy*, 2:1349–1388. Throughout the seventeenth century, occasionalism

I must say at once that all the reasons that prove that God exists and is the first and immutable cause of all effects that do not depend on human free will prove similarly, I think, that he is also the cause of all the effects that do so depend. For the only way to prove that he exists is to consider him as a supremely perfect being; and he would not be supremely perfect if anything could happen in the world without coming entirely from him... But God is the universal cause of everything in such a way as to be also the total cause of everything; and so nothing can happen without his will.<sup>85</sup>

In addition to this, both in *Le Monde* and the *Principles of Philosophy* Descartes' thoughts on God's creation of the all-pervasive substance (*res extensa*) out of which the whole universe is made, and on God's creation of the basic laws of physics through which things are in motion in the universe, force us to think that in Cartesian cosmology God is the *only* direct and absolute cause of everything in the cosmos.<sup>86</sup> Furthermore, the total quantity of motion in the universe is directly associated with the "perfect" and "immutable" nature of Divine Being:

God's perfection involves not only his being immutable in himself, but also his operating in a manner that is always utterly constant and immutable. Now there are some changes whose occurrence is guaranteed either by our own plain experience or by divine revelation, and either our perception or our faith shows us that these take place without any change in the creator; but apart from these we should not suppose that any other changes occur in God's works, in case this suggests some inconsistency in God. Thus, God imparted various motions to the parts of matter when he first created them and he now preserves all this matter in the same way, and by the same process by which he originally created it; and it follows from what we have said that

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became popular among Descartes' followers, including Clauberg, Clerselier, Cordemoy, de la Forge, Geulinx, and most characteristically Malebranche.

85 Descartes, AT IV 314; CSMK, 272.

86 Descartes, AT VIII 24–26; CSM I 210–211, and AT VIII 61; CSM I 240; idem., AT XI 34; CSM I 91.

this fact alone makes it most reasonable to think that God likewise always preserves the same quantity of motion in matter.<sup>87</sup>

The argument clearly suggests that the net quantity of motion in the universe is fixed since there are no variations in God's creative power due to His perfect and immutable nature. Thus, the active divine power is required not only for the initial creation of motion in corporeal substance but also for its subsequent preservation. And Descartes makes it clear that the act of divine creation and that of conservation are in actuality the same, because both of them involve the same process.<sup>88</sup> Despite all of this textual evidence of the view that, in the Cartesian world, God is the ultimate cause of everything, the question remains whether He is the *only* cause of motion in the universe, or if there is any other corporeal or spiritual being that can cause motion in bodies in the world, or if there is anything intrinsic in matter, like substantial forms, that give rise to motion in corporeal substances as Aristotle and the scholastics previously suggested. Concerning the first query here, we can say that in Descartes' writings there are some passages in which he does not exclude the possibility that some other created beings or substances can also cause motion in nature. But these are endowed with a power, and thus can cause motion because of the consent of God. About this issue, Descartes writes to Henry Moore:

The transfer which I call "motion" is no less something existent than shape is: it is a mode in a body. The power causing motion may be the power of God himself preserving the same amount of transfer in matter as he put in it in the first moment of creation; or it may be the power of a created substance, like our mind, or of any other such thing to which he [God] gave the power to move a body<sup>89</sup>

Certainly in this passage Descartes takes into consideration the possibility that in addition to God, our minds that are finite incorporeal substances could have the power of causing motion

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87 Descartes, AT VIII 61–2; CSM I 240.

88 Descartes, AT VII 49; CSM II 33.

89 Descartes, AT V 403–404; CSMK, 381.

in bodies in the world.<sup>90</sup> Nevertheless, in the passage just quoted above, Descartes seems to have in mind some other incorporeal beings to which “God gave the power to move a body.” What are those incorporeal beings to which he refers here? The passages from the *Principles* and the letter to Moore clearly subsume “angels” under the category of those incorporeal beings capable of causing motion in corporeal substances in the universe.<sup>91</sup> But what about finite corporeal substances, can they have actual causal efficacy and thus be able to cause motion in other corporeal bodies in their own kind or sensory and imaginary motions in incorporeal minds? Some experts, notably Daniel Garber, consider this “highly unlikely” in Descartes’ world.<sup>92</sup>

Garber might be right in thinking that Descartes portrays a weaker position on the causal efficacy of bodies, i.e., bodies are not capable of causing change in minds. Although our aim here is not to investigate this issue, it should be remembered that there is abundant evidence in Descartes’ works for his support of an interactionist conception of the mind and body relationship, on the basis of the physiological mechanisms.<sup>93</sup> However, the endorsement of causal flow in both directions has always been the most problematic issue in Cartesian philosophy of mind. But we find that in various texts that appear in the *Treatise on Man* and *Optics* the intrinsic mutual relationship between incorporeal minds (mental states) and bodies (brain happenings or neural events) seems to be guaranteed by the decree or ordainment of God.<sup>94</sup> Furthermore, concerning the second query raised above, Descartes’ position appears to be quite straightforward. A corporeal thing as pure *res extensa* does not intrinsically possess any power, quality, or “substantial form” which could give rise to any effect in nature.

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90 See also Descartes’ letter to Arnauld of 29 July 1648, AT V 222–223; CSMK 357–358.

91 Descartes, AT VIII A 65; CSM I 242; Letter to Moore of 5 February 1649, AT V 270; CSMK 361 and also AT V 347; CSMK 375.

92 See D. Garber, *Descartes’ Metaphysical Physics* (Chicago and London: University of Chicago Press, 1992), 303–304.

93 Descartes, *The Passions of the Soul*, AT XI 359–360; CSM I 343–344; idem., *Sixth Replies*, AT VII 437; CSM II 295.

94 Descartes, *Treatise on Man*, AT XI 143; CSM I 102; idem., *Optics*, AT VI 114; CSM I 166.

In brief, it is clear that in Cartesian cosmology God is the only *direct* cause of existence and motion in the universe in the true sense of the term. However other created beings like human minds and angels might be causes of creation and change by means of the will and decree of the Creator, who is all-powerful and omnipotent. Dynamism in the universe takes place on account of God's everlasting continuous creative power, but not of those substantial forms of Aristotelian and scholastic philosophy.<sup>95</sup> So, if we leave aside his mechanistic view concerning the structure of all pervasive extended substance, we can say that Descartes observes the universe through occasionalist spectacles. In this regard, his cosmological and philosophical system is more like that of al-Ghazālī than that of Ibn Sinā. For, according to the latter, the universe is necessarily produced from God's contemplation of His own essence, and this necessarily-produced universe gives rise to a necessarily connected material world in which generation, corruption, and motion, and the characteristic behavior of bodies are intrinsically determined by the substantial forms that flow from the emanation of the Active Intellect. This suggests that God, who stands at the top of the hierarchy, does not intervene in particular events of the material world, but leaves the job to other intermediary celestial agents, among whom the Active Intellect is considered to be the direct cause of the existence of the corporeal world as well as of the generations and corruptions within it. Heavens (i.e., their circular motions) are only auxiliary factors in this process. This understanding is very different from Descartes' doctrine of creation, according to which God is the only direct and ultimate cause of everything in the universe.

### **Is Descartes' Doctrine of Creation Orthodox?**

Earlier, we have seen that Ibn Sinā's account of the universe, as emerging through the process of emanation, led him into conflict with the orthodox Muslim theologians. In the strict sense, it has been argued that Ibn Sinā's deterministic-emanationist worldview is not compatible with the fundamental tenets of Islam by reason of its denial of the free will, choice, and direct act of creation of the

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95 See further, G. C. Hatfield, "Force (God) in Descartes's Physics," in *René Descartes: Critical Assessments*, ed. G. Moyal, 4:123-152.

Divine Being.<sup>96</sup> Similarly, although Descartes, as a follower of the tenets of the Roman Catholic Church, was believed to be a bona fide believer in God, some of his critics, such as the Jesuit Pierre Bourdin (in France), who is the author of the Seventh Objection; Gisbertus Voetius (in Holland); his correspondent, the Cambridge Platonist Henry Moore (in England); and later scholars argued that several aspects of his cosmology prepared the way for an atheistic or materialist worldview.<sup>97</sup> However, Descartes himself appears to be extremely cautious not to become involved in any theological disputes with the religious authorities over revealed truths of Holy Scripture in regard to the creation of the universe as well as other issues. In an open letter to Pierre Dinet, the head of the Jesuit order in France, Descartes clarifies his own position in a rather diplomatic fashion so as to obtain the favor of Church for his own philosophy:

I will not use the counter-argument that I do not regard my accuser's theology as orthodox, for I have never despised anyone for having different views from my own, especially in matters of faith, I know that faith is the gift of God, and in fact I have respect and affection for many theologians and preachers who profess the same religion as my accuser. But I have often declared that I have no desire to meddle in any theological disputes; and since even in philosophy [i.e., natural science] I deal only with matters that are known very clearly by natural reason, these cannot be in conflict with anyone's theology unless that theology manifestly clashes with the light of reason, which, I am sure, will not be said by anyone to be true of the theology that he himself professes.<sup>98</sup>

In his replies to the Sixth Set of Objections (theological critiques) of *Meditations*, Descartes is careful to point out that "I have never become involved in theological studies except in so far as they contributed to my private instruction, nor am I conscious of having so much divine grace within me that I feel a vocation for such sacred

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96 For the controversy between the Islamic and the Ibn Sināian view see Morewedge, *Metaphysica*, 273.

97 See Cottingham, *Descartes* (Oxford: Basil Blackwell, 1985), 104n28.

98 Descartes, AT VII 598; CSM II 394.

studies.”<sup>99</sup> Why does Descartes have to give such explanations to the theologians? Or, why has he to issue such general reassurances about his outlook? One of the most important reasons, I believe, is to avoid the hostility of the authorities toward his philosophy. For he is very conscious of the fact that during the seventeenth century, as previously, the religious authorities were extremely hostile toward any scientific developments that could undermine their own tunnel-visioned convictions. The Catholic Church especially prosecuted Galileo Galilei (1564–1642), the outstanding Italian mathematician, astronomer, physicist, and founder of the modern mechanics, for his defiant defense of the Copernican heliocentric conception of the universe as being heretical and atheistic. In 1633, Descartes was extremely alarmed when he heard of the condemnation of Galileo by the Roman Inquisition, and therefore withheld his treatise, *Le Monde*, from immediate publication. In this regard, in a letter to Mersenne, he cautiously wrote:

I must tell you that all the things I explained in my treatise, which included the doctrine of the movement of the earth, were so interdependent that it is enough to discover that one of them is false to know that all the arguments I was using are unsound. Though I thought they were based on very certain and evident proofs, I would not wish, for anything in the world, to maintain them against the authority of the Church... *I desire to live in peace* and to continue the life I have begun under the motto “*to live well you must live unseen.*” And so I am more happy to be delivered from the fear of my work’s making unwanted acquaintances than I am happy at having lost the time and trouble which I spent on its composition.<sup>100</sup>

However, later in 1644, with the publication of the *Principles of Philosophy*, Descartes tried by a number of complicated maneuvers to isolate himself from Galileo’s worldview. Here, for instance, it is worth recalling Cottingham’s observation in relation to the Cartesian position on the motion of the earth, in the *Principles*:

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<sup>99</sup> Descartes, AT VII 429; CSM II 289.

<sup>100</sup> Descartes, AT I 285; CSMK 42, emphasis added.

in the *Principles*, Descartes was fairly circumspect in his discussion of the earth's movement. He is careful to insist that on his account the earth does not move, "strictly speaking." This is because X's moving is defined as X's being "transferred from the vicinity of the bodies with which it is in contact" (*Principles* II, 25); yet the earth, Descartes points out, is not transferred from the adjacent portions of the celestial vortex (*Principles* III, 28). In spite of this convoluted manoeuvre (the convolutedness is apparent from the fact that Descartes has to admit that in his 'strict' sense, *none* of the planets can be said to move), Descartes does succeed in making his own view on the solar system pretty clear: the whole of the celestial matter in which the planets are located turns continuously like a vortex with the sun at its centre (*Principles* III, 30).<sup>101</sup>

Cottingham is clearly correct in his assessment of Descartes' position in the *Principles*. Despite all the difficulties, Descartes managed to discredit the old geocentric conception of the universe that is fundamentally based on the teachings of Aristotle and the Bible, of the scholastic philosophers, and the Catholic Church, and impart the message that he, too, heartily supported the new Copernican cosmological system propounding that all the planets including the earth turn in circular orbits about the sun as their common center.<sup>102</sup>

According to these new cosmological and scientific discoveries it was incomprehensible to believe that the earth was stationary and motionless at the center of several concentric, rotating spheres such as the moon, Mercury, Venus, the Sun, Mars, Jupiter, Saturn, and, finally, the finite outermost sphere (the so-called fixed stars). Surely, Descartes' denial of this old-fashioned geocentric cosmological system and adoption of the new heliocentric conception of the universe was in harmony with his mechanistic account of the origins and the structure of the universe. For he strongly argued that the universe itself is indefinitely large in spatial extent, and thereby consists of an indefinite number of worlds (since empty space is impossible), and indeed the earth is only one of them supporting

101 Cottingham, *Descartes*, 96.

102 Descartes, AT VIII A 101; CSM I 256–257, and AT VIII A 92; CSM I 253–254.

intelligent life. This being the case, we can no longer assume that the earth is the center of the universe,<sup>103</sup> and that all of its internal constituents are specially created and delivered by the Divine Being for the sole benefit of humanity as the scholastic philosophers and ecclesiastical authorities believed:

It is a common habit of men to suppose they themselves are the dearest of God's creatures, and that all things are therefore made for their benefit.... All these matters are surely quite hidden from us, since God's purposes are hidden from us; and this is why we ought not to have so high an opinion of ourselves as to think that everything in the universe is to be found here on earth, or exists for our benefit. For an infinite number of other creatures far superior to us may exist elsewhere.<sup>104</sup>

In the centuries before Descartes, we observe the subordination of physics to theology: everything in the universe has been specially designed or created by the benevolent God to be of utility to humanity. The structure and conduct of every single phenomena that is found in the created universe can be best explained in terms of ends, aims, intentions, or purposes, rather than by reference to prior causes. Descartes adamantly rejects this whole idea of the traditional search for final causes, as being completely irreligious and an impediment to scientific progress. In this regard, in the fourth meditation he states,

For since I now know that my own nature is very weak and limited, whereas the nature of God is immense, incomprehensible and infinite, I also know without more ado that he is capable of countless things whose causes are beyond my knowledge. And for this reason alone I consider the customary search for final causes to be totally useless in physics; there is considerable rashness in thinking myself capable of investigating the <impenetrable> purposes of God.<sup>105</sup>

In the fifth set of replies to the Objections of *Meditations*, Descartes formulates it explicitly: "We cannot pretend that some of

<sup>103</sup> Descartes, AT VIII A 81; CSM I 248–249.

<sup>104</sup> Descartes, AT V 168; CSMK 349.

<sup>105</sup> Descartes, AT VII 55; CSM II 39.

God's purposes are more out in the open than others: all are equally hidden in the inscrutable abyss of his wisdom."<sup>106</sup>

When we consider the fundamental characteristics of the Cartesian cosmology, i.e., the simplicity, homogeneity, and its mechanical nature, it appears to have nothing in common with the doctrine of special creation expounded in Genesis—that the ultimate purpose of God's creation is humanity. One can clearly observe this in a letter to Chanut of 6 June 1647, in which Descartes states that "We may say that all created things are made for us in the sense that we may derive some utility from them; but I do not know that we are obliged to believe that man is the end of creation. On the contrary, it is said that all things are made for his [God's] sake and that God alone is the final cause as well as the efficient cause of the universe."<sup>107</sup>

In a private conversation with Burman on 16 April 1648, Descartes has been seen to suggest that the scriptural descriptions, or anthropomorphic verses, of the Bible in regard to genesis are only allegories, made on the level of the understanding of the pre-philosophical common people, while in reality, the process of creation is far above what such ordinary people imagine.<sup>108</sup> As a scientist and mathematician he strongly believed in the universal laws of physics, that is to say, laws of matter in motion which are perfectly sufficient to explain the origination and the structure of the natural phenomena or of the universe. And thus, the metaphorical anthropomorphic account of their genesis, given in the Bible, is only a matter of faith, and hence better left to the theologians.

Descartes was sometimes labeled an insincere or cautious believer in religion, or in God, and a precursor of the materialistic or atheistic conception of the universe, because of these apparent inconsistencies in his reasoning, his separation of theology and philosophy (natural science), and his affection for a mechanistic and evolutionist approach to cosmology. Some interpreters even tend to ignore the role of God in Cartesian physics. It is argued that the divine creative power is initially invoked as the ultimate cause of

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106 Descartes, AT VII 375; CSM II 258.

107 Descartes, AT V 53–4; CSMK 321.

108 In his conversation with Burman, Descartes states: "As far as Genesis is concerned, however, the story of the creation to be found there is perhaps metaphorical, and so ought to be left to the theologians" (AT V 169; CSMK 349).

the creation of the all-pervasive corporeal substance out of which the entire universe is constructed, and of the quantity of motion in the universe. But once the universe is created and the laws of motion have been established, thereafter little further reference is made to the Divine Being. The structure and operation of natural phenomena are explained solely by reference to the size, shape, and movement of particles of matter. Having in mind the development of a profoundly mechanistic view of the universe, Blaise Pascal (1623–1662), the French philosopher (and Christian), condemned Descartes, a “father” of Enlightenment Rationalism, by saying, “I cannot forgive Descartes. In all his philosophy he would have been quite willing to dispense with God. But he had to make Him give a fillip to set the world in motion; beyond this, he has no further need of God.” And: “Descartes [is] useless and uncertain.”<sup>109</sup> The new Cartesian-style universe—the “silent universe of infinite spaces” might have terrified Pascal. However, there are many reasons to believe that Descartes, *the philosopher* and *scientist*, had a deeper and more overwhelming respect for God than many of his predecessors, contemporaries, and accusers. This is obvious from his vigorous emphasis on God’s creative power as the ultimate basis of everything that occurs in the universe; God is the only cause of the existence of the all-pervasive substance, of the existence of the laws of physics, of the importation of those laws into matter, and of the preservation of the established system in its later stages. Indeed, in addition to all those, we have to acknowledge that the divine creative power is also required as the ultimate cause of the existence of the human soul, whose nature is essentially different from the nature of corporeal substance. But against his critics Descartes insists on the fact that in the process of creation God’s ultimate purposes are incomprehensible to mankind because man is only a tiny part of a majestic cosmos. The scope of the divine creation is infinitely beyond our power to comprehend. Thus, the Cartesian cosmology fundamentally rules out the investigation of God’s purposes as beyond the scope of science.

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109 Pascale Blaise, *Pensées*, trans. W. F. Trotter (Mineola, NY: Dover Publications, 2003), 23.

## Conclusion

There is no doubt that Ibn Sīnā, al-Ghazālī, and Descartes had a great interest in cosmology and cosmogony. Ibn Sīnā's account of the origins and structure of the universe is essentially different from that of al-Ghazālī and Descartes. In essence, Ibn Sīnā's universe has a structure that is similar to that of Plotinus and his Muslim predecessor al-Fārābī. The main concern of his cosmology is to explain the relationship between the One Necessary Being and the contingent world and beings that have the characteristic of multiplicity. At a fundamental metaphysical level, the multiplicity of contingent beings is explained in terms of the three different aspects of thoughts (or knowledges) of the celestial intellects subsequent to the unitary First Cause. In sum, Ibn Sīnā's cosmology and his schema of emanation explain the celestial and terrestrial realities of the universe as an eternal product of the Necessary Being, or God, not through choice, but as a necessary implication of His own essence. The Necessary Being is the First Cause of the universe, from whose act of self-contemplation of His own essence, the first effect (that is, the First Intellect), necessarily and eternally emanates. The First Intellect's contemplation of its Divine Creator, of itself as necessary being due to its Creator, and of itself as a possible being due to itself, in turn, gives rise to the next intellect, the soul and body of the outermost celestial sphere. Each subsequent intellect in the hierarchy produces a similar set of outcomes until the Tenth Intellect or Archangel. The act of self-reflection of this last celestial being is only sufficient to produce the underlying substratum-matter and all the natural forms (including plant, animal, and human souls) of the sublunary world. In this schema, the Active Intellect is considered to be the direct cause of the existence of the material world and all of its contents. In this sense, Ibn Sīnā's Necessary Being is not directly connected with the phenomenon of the material world (the same also applies to contents of other possible worlds) but only through intermediaries, i.e., through the celestial angelic beings.

This being the case, there appears to be a radical difference between the cosmologies of Ibn Sīnā and Descartes. The Cartesian cosmology, unlike Ibn Sīnā's, does not envisage the universe as an outpouring from the essence of the Necessary Being but rather regards it as the result of God's instantaneous act of creation; God,

as Descartes himself puts it, “simultaneously understands, wills and accomplishes everything.”<sup>110</sup> The account of the origins and structure of the universe that is offered in *Le Monde* and *Principles* is predominantly deistic, mechanistic, and evolutionist. Let us, says Descartes, imagine an initially chaotic composition of matter, “the laws of nature are sufficient to cause the parts of this chaos to disentangle themselves and arrange themselves in such good order that they will have the form of a quite perfect world.”<sup>111</sup> Although Descartes on this occasion introduces the structure of this world in the form of “a fable” (what he labels an “imaginary new world” so as to avoid the hostility of theologians), our philosopher has in mind the laws of nature that are actually the ones through which the real universe operates. But, in Ibn Sīnā’s cosmology, God is not involved in the process of creation and destruction of specific events or objects, but has knowledge of events in a universal manner. The structure of the laws governing the universe is independent of the will of the Necessary Existent. In the process of creation, as a matter of fact, Ibn Sīnā takes the form of a Plotinian freedom from extrinsic restraint. The will of the Perfect Being is identified with Its knowledge of the general laws that best arrange and govern the order of the universe. The good universal world order, that is, the general laws of the universe, are due to the knowledge and the will of the Perfect Being. The rightfulness of God’s acts is not because God performs them. The creation follows from “what God is,” but is not an essential element of “what God is.”

In the Cartesian universe, God is the only real and direct cause of all things, including our knowledge of the material world, of matter or the all-pervasive corporeal substance out of which the entire universe is constructed, the laws of motion imparted into the various portions of matter, as well as conscious human beings acting freely. Nothing in the universe takes place without His free will, choice, and direct intervention.<sup>112</sup> Here, Descartes clearly stands in opposition to Ibn Sīnā, according to whom everything in the universe necessarily and eternally emanates from the essence of the Necessary Being. In Ibn Sīnā’s universe, the Necessary Being transcends all the celestial intellects that set the spheres into eternal

110 Descartes, AT VIII A 14; CSM I 201.

111 Descartes, AT XI 34; CSM I 91.

112 Descartes, AT IV 314; CSMK, 272.

motion. God accomplishes His act of creation only through those intermediaries or celestial angelic beings, and in this sense it may be said that the Necessary Being is not directly related to the operation of the phenomena of the physical world and behavior of conscious human beings.

In Cartesian physics, the role of God appears to be rather different from, for example, human psychology. In his early work on physics, *Le Monde*, Descartes makes it clear that the universe operates in accordance with certain immutable laws, established by God—the operation of the universe is entirely uniform due to the immutability and constancy of the divine nature. The principle of conservation is intimately derived from the immutability of God.<sup>113</sup> From some textual evidence, one can argue that Cartesian science may be considered to be relatively “autonomous” in the sense that the divine creative power is implored as the ultimate cause of the existence of matter and of the quantity of motion at the beginning of the creation of the universe—once the laws of motion have been established there, little further reference is made to God. In such a cosmology, the structure and operation of natural phenomena are explained only by reference to the size, shape, and movements of particles of matter and on this account, any mention of divine purpose is fundamentally ruled out as beyond the scope of science. But, in the Cartesian system, it is also possible to find some textual evidence in which a great emphasis is placed on the term “divine concurrence.” Once things are created, the “concurrence of God,” that is, the continuous “cooperative” power of God is always required for the preservation of those created beings in existence. Without the continuous concurrence of God, created substances would simply collapse into nothingness, despite their incorruptible nature. In Part II of *Principles*, Descartes appeals to the “ordinary concurrence” of God so as to give an account of the conservation of motion in the cosmos. In this sense, the term “divine concurrence” seems to refer to the *consent of God* in the continuation of things in the universe—God approves the continuation of things in accordance with their own principles, laws, or forces. In a word, God allows things to continue “under their own steam as it were.” However, in the third meditation the philosopher proclaims the

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113 Descartes, AT XI 43; CSM I 96.

stronger thesis that the divine acts of preservation and of creation are in reality identical:

the same power and action are needed to preserve anything at each individual moment of its duration as would be required to create that thing anew if it were not yet in existence. Hence the distinction between preservation and creation is only a conceptual one, and this is one of the things that are evident by the natural light.<sup>114</sup>

In his cosmological system, al-Ghazālī tries to reconcile the claim that the entire universe is the free creation of the Divine Being with the idea that this created world has a consistency concerning causes and effects as we observe them. Here, he introduces a theory of dual causality, that is, the Divine causality and the natural one. The Divine Being is the First Cause of everything that takes place in the cosmos. Due to God's choice and free will, nature is allowed to function in accordance with the essence of causality or the laws of matter in motion. In other words, the application of the basic laws of physics yields a universe in which everything comes into existence through the laws of causality. It is the continuous cooperative power of God, whereby He preserves things in existence by keeping the same quantity of motion (or laws of physics) in matter in a continuous operation. In fact, al-Ghazālī declares a theory that may be called a theistic determinism, in which the divine and other causes are consubstantiated. First of all, according to this theory, God is the First Cause of everything that occurs in the universe and His actions derive from His spontaneous will. Secondly, the theory insists that the other natural causes act through the necessity inhering in their essences that are created and continuously maintained by the Divine Being. In this sense, the other causes act through God indirectly. On this specific issue, in fact, al-Ghazālī and Descartes are very close. Both philosophers strongly support the idea that the universe is governed by laws of causality or laws of physics imposed directly by the will of Divine Being at the time of creation, and the fact that the laws of causality operate by virtue of the power and constancy of the deity. In the cosmos whatever happens is due to God's will and decree. God's wise decree signifies an absolute primary design

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<sup>114</sup> Descartes, AT VII 49; CSM II 33.

as well as eternal order unfolding at once. This design and order determines the essence of causality.

In Ibn Sīnā's cosmology and cosmogony, his fundamental intention is to demonstrate the continuous succession between the One Necessary Being and its creation. His emanationist cosmology describes the Necessary Being, God, at the summit of the Universe, as the source of all things. The main concern of his cosmology is to find an adequate solution to the problem: how can all diversity and plurality in the universe emerge from a unitary First Cause? Thus, he offers his version of the emanation process as a clear solution to this fundamental philosophical problem. We are informed that plurality is the result of the contingent nature of the First Intellect, but not the essence of God. But if we look at the issue from the Cartesian (and also from al-Ghazālī's) point of view, there is no need to accept such a circuitous way of accounting for the relation between God and the universe. The universe has been created by God all at once. The laws of causality or laws of physics are imposed directly by the Divine will and they operate by virtue of the power and constancy of the deity. Whatever occurs in the universe is because of God's free will and His actions emerge from His spontaneous will. The created things are due to His actions that derive from His spontaneous will. The plurality of the universe does not cause plurality in the essence of the Divine Being.

Moreover, in his cosmology Ibn Sīnā establishes some sort of relation between the translunary and sublunary world. As a celestial substance the Active Intellect is considered to be the primary cause of all sorts of existence in the material universe, besides the celestial spheres, which are only auxiliary factors in the process of creation. The uniform motions of the celestial spheres aid the Active Intellect eternally and necessarily emanate the prime matter of the sublunary world. Then, sublunary matter is prepared and organized by the influences of the spheres for the reception of the natural forms from the emanation of the Active Intellect. What is clear is that the Active Intellect is the primary factor for the existence of the four elements and also for the simple and more complex forms of living beings in the sublunary world. On the emergence of the human soul Ibn Sīnā makes it clear that as soon as the complexity and the equilibrium of the components of the human body is established, the Active Intellect emanates the human soul, in addition to the faculties of vegetative

and animal souls. But Descartes does not envision the universe as consisting of two fundamental parts, namely the translunary world and the sublunary world, nor does he speak of celestial substances like the Active Intellect as the primary cause of all sorts of existence in the material universe, or of the celestial spheres as auxiliary factors in the process of creation. God is the ultimate cause of the existence of the universe in the sense that He created *res extensa*, that is, the all-pervasive extended substance out of which the visible universe is composed. Thus, in Cartesian cosmology God is the universal and primary cause of the existence of all-pervasive extended substance as well as all the motions in the universe.

Ibn Sīnā's approach to the phenomena of the universe is totally emanationist; at the highest point of the universe there is a perfect and transcendent principle, that is, One Necessary Being, from which all reality proceeds as a necessary implication of His contemplation of His own essence. In this emanationist schema, the incorporeal celestial intelligences, in turn, carry out the generation of things in the universe, after the First Cause, through their performance of three distinct types of thoughts or knowledge. Such an emanationist rationalization of the cosmos has nothing in common with the Cartesian creationist cosmology in which everything, from microcosm to macrocosm, material or immaterial matter or substance, has been created through the ultimate will, choice, and direct intervention of an all-powerful, omnipotent God. The creation of the things in the universe at the initial stage, and their subsequent preservation is all due to the creative power and consent of the Divine Being. During our examination of Cartesian cosmology, we have noted that Descartes was, like al-Ghazālī, in favor of a voluntaristic conception of Divine Will in his account of the source and construction of reality in the universe. This recognition of Divine causality made his philosophy, especially his cosmology, much more akin to that of al-Ghazālī than to that of Ibn Sīnā. Dynamism in the Cartesian physical world, unlike Ibn Sīnā's, takes place because of God's everlasting continuous creative power, rather than of those "substantial forms" of Aristotelian and scholastic philosophy.

Both Ibn Sīnā and Descartes agree on the indefinite divisibility of matter, and thus both reject the systems of earlier atomists, and the possibility of empty space proposed by them. However, despite this agreement, they have different views about the explanation

of the structure and operation of the natural phenomena of the corporeal world. In Ibn Sīnā, phenomena of the sublunary world are substantially explained in terms of the “substratum–matter” and “corporeal form” relationship. The Active Intellect’s creative power is fundamentally invoked as the ultimate and real cause of the existence of the underlying substratum–matter, the four elements, the forms of all simple and complex beings in the material world. In addition, the uniformity, complexity, diversity, generation, and corruption in the phenomena of the lower sublunary world are closely related to the uniformity, diversities, and influences in the celestial spheres. In contrast with the system of Ibn Sīnā, in Cartesian cosmology no reference is made to the celestial spheres or intelligences for the explanation of the structure and operation of natural phenomena. Even the possibility of the “divine purpose” in creation is rejected as irrelevant to scientific explanation. Everything about matter can be explained in terms of the “size, shape, and arrangements of its parts.” Descartes himself boasts that his science “recognises no matter in corporeal things apart from that which the geometers call quantity—i.e., that to which every kind of division, shape and motion is applicable.”<sup>115</sup> Thus, Cartesian science and cosmology appears to be more advanced and much closer to the modern scientific understanding than does that of Ibn Sīnā, which fundamentally bears the features of Neoplatonic and Aristotelian worldviews, and of his own metaphysical and ontological predilections.

After all, in this study, Ibn Sīnā and Descartes have been brought into conversation with one another in order to show how they have shaped the way of thinking carried out in the East and the West during the eleventh and seventeenth centuries and onwards. Our reflections on the texts of Ibn Sīnā, al-Ghazālī, and Descartes have also shown that the very same philosophical issues occupied both eastern and western philosophers.

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115 Descartes, AT VII 78; CSM I 247.