

The Reception and Transmission of Ideas about Astronomy and Cosmic Harmony of Two Islamic Scholars in Marsilio Ficino's *Compendium in Timaeum*

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The late fifteenth century was second only to the twelfth century as far as the revival of studies of Plato's *Timaeus* and Calcidius' *Commentary* on the dialogue is concerned (Godwin 3–6, 60–63). This renewed interest in the medieval tradition of Timaeian study in early Renaissance Italy has to a large extent gone unnoticed by historians of philosophy and musicology (Hankins 77). The aim of the present study is to explore the nature and extent of this revival, and to offer some reflections on its impact on developments within the Timaeian concept of cosmic harmony. As an example of these changes, I intend to explain how Marsilio Ficino (1433–1499) contributed to developments that changed the medieval representation of cosmic harmony radically. In the first half of this study the reception and transmission of the conception of angels as transmitters of cosmic harmony in Ficino's *Compendium in Timaeum*, which he probably borrowed from the Islamic philosopher Al-Ghazali (1058–1111), will be investigated. In the second half, I will focus on the way in which Ficino used the criticism of Ptolemy's *Almagest* by the Islamic scholar Jabir ibn Aflah (± 1100–1160) for his transformation of the tradition of the harmony of the spheres.

Plato's *Timaeus* is based on the Pythagorean belief that numbers and proportions are the basic principles of the cosmos. In his *Timaeus* Plato presents a scientific model of the cosmos by means of a myth of the creation of the body and soul of the cosmos and of man, along with a description of their structure and functioning. Creation is described as the imposition—by the divine Demiurge (whom Ficino within the frame of his *prisca theologia* considers as an adumbration of the biblical God)—of a mathematical order on matter, which previously existed in a state of chaos, but is now transformed into the four

elements: fire, air, water and earth, which together make up a perfect harmony. These elements constitute both the cosmic and the human body and soul, and are joined together through the mathematical bond of continuous geometrical proportion. In his *Compendium in Timaeum* Ficino raises within this mathematical construction metaphysical questions about the relationship between God, the biblical Creator or Demiurge, the eternally existing model of harmonic creation and the constantly changing created cosmos of which the human being forms a part.

In his quest for the precise character of cosmic harmony, Ficino tries in his *Compendium in Timaeum* first of all to explain what Plato himself in the *Timaeus* wrote about this topic. For his interpretation of Plato Ficino uses in the first place other works of Plato himself, which sometimes elucidate difficult or unclear passages in the *Timaeus*. In addition to them, he also makes frequent use of an inexhaustible corpus of sources of the commentary tradition on Plato's *Timaeus*, with which he became acquainted during his studies, and which provides him with an enormous range of interpretive possibilities. But wherever Ficino considers the solutions of commentators on Plato's *Timaeus* not adequate to solve interpretive problems, he also makes use of different sources in order to give his own solutions a solid historical basis. Among these are the writings of medieval Islamic scholars.

During the eclipse of the Greek and Roman cultures, many of the Greek writings passed into the hands of Islamic scholars, who translated and commented them, and also introduced scholarly contributions from Asia. Many astronomical observations, for example, were made at different locations in the Muslim world, but there was little effort to improve or modify the Greek model of Ptolemy. This body of learning first began to be discovered by Europeans in the eleventh century. At the beginning of the twelfth century the Arabic versions of Greek works were translated into Latin: an edition of Ptolemy's *Almagest*, for example, was translated at Toledo, a city relatively close to Seville, where Jabir ibn Aflah came from. But although during the Middle Ages Hindu-Arabic mathematics were presented, medical and alchemical works were translated, and a trend toward empiricism was promoted in the Western world, the dominant world picture became the christianized version of Aristotelian philosophy created by Thomas Aquinas and Albertus Magnus in the thirteenth century. This view tended to treat scientific theories as an integral part of philosophy. They postulated, for example, the existence of angelic agents to account for the movements of the heavenly bodies, as did Al-Ghazali in the eleventh century.

***Prisca theologia* and magic as frame of reference for Ficino's concept of cosmic harmony**

Almost every scholar acquainted with the philosophy of Marsilio Ficino knows the story of the famous Byzantine scholar Gemisthus Pletho, who visited the Council of Ferrara in Florence in 1438, and thereby inspired Cosimo de Medici to start a centre of Greek learning in Florence (Kristeller, *Eight Philosophers* 37-39). When Cosimo's project was realized in 1462, Marsilio Ficino, the son of Cosimo's physician, who by then had been schooled in Platonic studies for several years, was selected to lead a group of scholars which later generations have referred to as the Platonic Academy (Kristeller, 'Platonism'). By 1462 Marsilio Ficino had already written the first versions of his *Timaeus commentary* (Hankins 84–85). His lifelong interest in Plato's *Timaeus* resulted in 1481 in the first version of his *Compendium in Timaeum*. This fascinating commentary on Plato's *Timaeus* can be considered as representing a new episode in the tradition of theories about cosmic harmony.

Ficino's *Compendium in Timaeum* can best be studied against the background of his belief in the existence of a *prisca theologia*, a pagan tradition of divine knowledge which Ficino believed paralleled and confirmed the revealed truth of scripture (Kristeller, 'Platonism' 146–148; Schmidt-Biggemann 259–268). In its most general sense this tradition of theological wisdom that circulated in ancient times among pagan people, served in Ficino's philosophy to bridge the gap between pagan and Christian traditions that functioned as an explanatory principle in the contemporary Christian understanding of history. The problem with this principle was that if Christian wisdom would constitute the exclusive archetypal source of human knowledge of the divine plan for the cosmos and God's creatures, then the wisdom of pagan authorities and traditions would have no significance whatsoever in the process of obtaining true and certain knowledge of the cosmos. In order to bridge the traditional gap between pagan and Christian thinkers, Ficino took up the position that the greatest of the ancient pagan thinkers (amongst them his beloved Plato and Pythagoras) were initiated into the secrets of the divine structure of the cosmos. Ficino firmly believed in the existence of an esoteric tradition of divine learning that was passed down from an authentic source, for example from Moses in the book of Genesis, to pagan authorities of great wisdom and piety, for example Plato in his *Timaeus*. The divine Plato, 'our Plato' as Ficino often refers to him in his *Compendium in Timaeum*, was believed

to represent not only a superb kind of human reason, but also a kind of wisdom that was identical with the Mosaic wisdom (*CiT* 1443, 1449, 1463, 1464).

Within the context of this framework Ficino tries in his *Compendium in Timaeum* to align the biblical story of creation in Genesis with the myth or creation in Plato's *Timaeus*. He adds to the biblical story of creation, in which God brings the natural cosmos into being through the agency of His creative Word, the further element of an ancient revelation, which he finds amongst others in Plato's *Timaeus*. The revelation of Plato's *Timaeus*, which in Ficino's view is passed on within the line of the tradition of a *prisca theologia*, directly linked the Bible (which Ficino is convinced is the direct word of God) with human traditions in which knowledge, language and music play an important role. With the myth of the existence of a *prisca theologia* Ficino constructed an interpretive framework within which he manages to incorporate his theory of music and cosmic harmony. This myth functions as a historical and philosophical legitimation of his way of reading and deciphering the harmonic structure of the cosmos.

In Ficino's philosophy man is capable of penetrating the cosmos, and consequently its secret powers, particularly by means of musical formulae and harmonic numbers, which had been revealed to the initiates of the tradition of *prisca theologia*. Ficino believes that by way of using intervals based on combinations of perfect numbers, music reflects, in an intrinsic and essential manner, the harmonic nature of the whole cosmos and all the parts it is made of. In Ficino's philosophy number is a middle term that connects the divine with the natural world. Therefore, in the introduction of his *Compendium in Timaeum*, Ficino first of all describes the function of numbers, or 'mathematical things', which are capable of connecting the divine with the natural world:

... and, although in the 'Timaeus' he [Plato] deals with nature, he often rises upwards to [deal with] divine things. Indeed, he does no offence to divinity by coupling the divine and the natural. For nature is an instrument of the Godhead. And so [Plato speaks] of natural things in a divine way, as does Aristotle, of divine [things] in a natural way. [Plato] also places mathematical things in between, for being the middle things of both, the divine as well as the natural. Indeed through their numbers they are signs of the divine, through measures of the natural.¹

Ficino's harmonic science then, is a kind of knowledge or understanding that enables man to read the harmonic structure of the cosmos by lifting the veil of appearance, in order to penetrate into the mathematical and harmonic core of the cosmos, that is, into the way the elements connect themselves into a cosmos. His medieval predecessors in the Timaeian tradition of cosmic harmony were convinced that they had no real access to the secret harmony of the cosmos. They strongly held the belief that God created the cosmos in a harmonic and perfect way, but they were also convinced that human beings were allowed to catch only a glimpse of God's harmonic creation. Because they believed that gaining access to the harmonic secrets of the cosmos was fundamentally impossible to man, medieval scholars never probed the precise nature of the harmonic cosmos and the music of the spheres.

In contrast with his medieval predecessors, Ficino believes that God has given man the ability to know the structure of the harmonic cosmos by means of bringing into perfection his own being. According to Ficino, man can act in harmony with God as fellow creator of his own nature (Bono 26). This role as co-creator sets man apart from all other creatures in the cosmos. Ficino sees man no longer as a passive witness of God's creation, but as an active transformer of the cosmos and himself. Ficino believes that, in order to perform his task in God's creation, the biblical story of creation in *Genesis*, as well as the myth of creation in Plato's *Timaeus*, is given to man as sources of revelation. In his opinion, these sources contain the key to all secrets of the harmonic cosmos. Within Ficino's harmonic science magic plays an important role as an instrument to acquire knowledge and to influence cosmic events. By magic is meant all the ways, including the use of music, in which man is able to dominate the natural powers with which God endowed his creation. Therefore, magic for Ficino is more than a way of knowing; it is a practice operating on the very nature it tries to decipher. In the framework of his philosophy, magic and music function as transformational arts, by means of which man is able to dominate natural forces in order to discover the secrets of the harmonic cosmos and to align himself with God's perfect creation (Walker 3–59; Tomlinson 101–44).

Al-Ghazali's *Metaphysics* as a source for Ficino's reconciliation of biblical and Neoplatonic ideas about the creation of a harmonic cosmos

Ficino's view of cosmic harmony and the real existence of a music of the spheres cannot be understood without a proper understanding of the function of angels

in his world picture. His ideas about the magic interplay between the parts of the cosmos and about the mediation of angels have an important function in explaining his concept of cosmic harmony (Tomlinson 67-100). For Ficino cosmic harmony is much more than a metaphor. In his *Compendium in Timaeum* the planets are associated with individual pitches as well as with modal melodies and harmonies, which possess specific celestial powers. Therefore, human beings with their music on earth are capable of producing magical effects, not by manipulating the planets with their music, but, on the contrary, by imitating the music of the planets themselves. This kind of musical imitation enables the musical magus on earth to elicit beneficial celestial influences.

The possibility of Ficino's musical magic rests to a large extent upon the assumption of a divine plan through which the ideas in the divine Mind of the Creator bestowed on the cosmos a harmonic structure, in which patterns of correspondence among its various levels and individual parts exist (Bono 36). Such a harmonic structure is also a basic condition for sympathetic interaction between the different parts of the cosmos. In Ficino's *Compendium in Timaeum* the diversity of material forms in nature exhibits on a deeper level a unity of purpose and a harmony of function. On this level the mathematical and architectonic blueprint of God's creation becomes perceptible. The key to understanding this kind of unity and harmony and the possibility of working according to this knowledge is the grasp of the correspondences linking parts of levels of the universe, and understanding how to make such links operational. In order to explain how man in his musical endeavours can, with the help of his Creator, create and imitate the music of the spheres, which is characteristic of the planets themselves, Ficino implants a kind of metaphysics in his *Compendium in Timaeum*, which provides for the need of an architectural structure of the cosmos, in which patterns of correspondence among its various levels and individual parts become effective, by way of angels as transmitters of cosmic harmony.

Although Ficino never explicitly refers to the metaphysics of Al-Ghazali in his *Compendium in Timaeum*, it is highly probable that he used the *Metaphysics* of this Islamic philosopher as a source for his own philosophy, in which angels play an important role as transmitters of cosmic harmony. Al-Ghazali was the most important philosopher in the medieval history of the Islamic reaction to Neoplatonism (Fakhry 244). A very strong reaction against rationalism in general and Greek philosophy in particular can be seen as characteristic of Al-Ghazali's

attacks on Muslim Neoplatonists, which he believed were a threat to his orthodox belief. Al-Ghazali, as Ficino after him, was grasped by an ardent desire for truth and was distressed at the sight of conflicting beliefs and creeds and the passivity and gullibility of many people who defer blindly to the authority of their ministers (Fakhry 245). The chief contribution of Al-Ghazali to the history of philosophy lies in his identification with the anti-philosophical party, and his attempt to prove the incoherence of the ideas of certain Neoplatonic philosophers on philosophical grounds.

In his philosophy Al-Ghazali starts from the fundamental belief in the existence of God. His basic assumption is that God is the repository of the essential natures of all beings found in nature. Ficino uses this idea, but, by an ironic twist of history, he integrates this idea into the framework of his own Neoplatonic philosophy, probably the very same philosophy that had been attacked by Al-Ghazali. In Ficino's philosophy man's ability to acquire knowledge of the cosmos entails some measure of similarity between himself, the firmament and the divine Intelligence. Ficino draws here upon the Christian-Platonic tradition in which ideas or forms of created substances mirror the ideas contained in the divine Intelligence. In his *Compendium in Timaeum* he describes this idea as follows:

And it would in fact not be inappropriate for the Platonists to say that the [divine] Mind is mirrored in the firmament...²

If one assumes that through His act of creation God instantiated the divine ideas in the corporeal substance of the firmament, it becomes possible to associate the harmonic structure of the God-created cosmos with the harmony of the spheres. The cosmos that Ficino describes in further detail in Chapter XXVIII of his *Compendium in Timaeum*, emanates from God, its Creator. It constitutes a hierarchy in which each being has its place according to its degree of perfection, a hierarchy descending through the orders of angelic Intelligences and rational souls, to corporeal forms and unformed matter (*Cambridge History of Renaissance Philosophy* 571). God directly pours the ideas of all things into the angelic Intelligences. Ficino's concept of angel plays an important role in his *prisca theologia*, precisely because he attributes to angels perfect knowledge of the cosmos. The entire cosmos functions as an active, living being, which Ficino sketches with a paraphrase of a passage of Plato's *Timaeus*:

... [Plato] proceeded to say: God created the world alive, animated and intellectual. For where he says 'alive' he means a sort of life that is dispersed through the bodies of the world, which is equally extended as the body of the world and acts by means of motion. But whenever he says 'intellectual', he means the angelic intelligences, which are appointed to rule the heavenly spheres properly, and which are spatially indivisible and temporally unaffected; the existence [of these angelic intelligences] is completely different from natural life, which is always divisible and changeable as to its corporeal form.³

Earlier in his *Compendium in Timaeum* Ficino explained that the soul of the cosmos contains within the hierarchy of being as many seminal reasons as there are ideas in the divine Mind. By way of these reasons Soul is able to generate the forms of material things. The World-Soul is united to the body of the world by spirit, a fifth, ethereal essence, containing all the qualities of the four elements. In explaining the way in which the Creator created this particular bond between soul and matter, Ficino, again, has discovered in Plato's *Timaeus* a universal truth about the cosmos, which he restates as follows:

For which reason [Plato] assumes that in the intelligible world, which is also called being and life itself, there are the principles and ideas of the fourfold nature; he divides the world, in conformity with them, into four regions: the first [region] extends from the first heaven through the sphere of fire that comes after that heaven to the principle of the air; the second [region] from there to the air up to the middle; the third [region] from there to the earth, whereas the fourth actually is the earth; and to this partition correspond in each region four groups of rational inhabitants, namely the worldly gods, the angels, then the demons, and finally the particular souls.⁴

The picture of the inhabited spheres of the cosmos, which Ficino gives in this quotation, can be represented schematically in the following way:

<i>Region of the cosmos</i>	<i>Element</i>	<i>Living inhabitant</i>
First ethereal heaven	fire	gods of the world
Second heaven of the Zodiac	air	angels
Middle of the cosmos	water	demons
Earth	earth	particular souls

The Neoplatonic influence in the world picture in Ficino's *Compendium in Timaeum* is evident: through the spirit of the living inhabitants of the cosmos, the divine Power in the cosmos passes from the divine Intelligence in the highest heaven down to human beings on earth (Etienne 1: 125–130). But because 'Intelligence'—which is the key concept in the Neoplatonic metaphysics of Proclus and Plotinus—in Ficino's philosophy is no longer of the same substance as the One but subordinated to it, Ficino breaks here with the Neoplatonic tradition, by assigning some of the attributes of Intelligence to God and others to angels (*Cambridge History of Renaissance Philosophy* 572).

The myth of creation that is given at the beginning of Plato's *Timaeus*, presents Ficino with a number of points that were difficult to reconcile with the biblical account of creation. One of the major problems for Ficino was the claim that the Demiurge put his sons in charge of completing the material creation including the task of supplying bodies for the souls inferior to themselves, for example the souls sown in the planets (Allen 416). For Ficino the Neoplatonic explanation of this passage in Plato's *Timaeus* appeared to be irreconcilable with Biblical evidence, as aforesaid. In order to align this fragment of the *Timaeus* with the Mosaic account of God Himself creating the whole creation without any help, Ficino had to use sources from outside the Neoplatonic tradition. Ficino made creative use of these sources within the interpretive strategies of his *Compendium in Timaeum*. Ficino found, for example, inspiration in the *Metaphysics* of Al-Ghazali for a solution of the problematic role of God's sons in Plato's *Timaeus*. He used Al-Ghazali's view on angels to reconcile passages in the *Timaeus* and the Bible by the equation of the sons of God with angels, who play an important role in the Bible.

In Chapter XXXXI of his *Compendium in Timaeum* Ficino explains the function of the angel within the hierarchy of being in the cosmos. Regarding the function of God's sons and angels in creation, according to Ficino, there is no

real difference between the book of Genesis and the *Timaeus*, if viewed in the proper perspective of the *prisca theologia*. So, he writes:

Therefore, the Architect of the world then charges his sons, that is the souls of the spheres and of the stars and of the demons, as well as the lower angels, that they in imitation of Him must start mixing the things under the moon; and that they must subject everything to man and that they connect his rational [human] soul, which is received by him, with an imperfect body, by means of a kind of irrational life, which is partly dependent on themselves [viz: on the souls of planets, stars, angels and demons] and partly dependent on the soul of man. You will notice, however, in the very words of God [viz: the Bible] that whatever is done immediately by God is eternal and that whatever is somehow composed is perishable in so far as it is composed; but in so far as things are composed in virtue of a divine will, they are made in such a way that in them unity prevails over multiplicity; so they are preserved without being perishable. Moreover, one will observe that whenever Plato says that God, when He commands, remains in his own dwelling, whereas his servants follow Him, he means that there is change in God himself, even if he rules over and moves the movable things, but that in His servants His Providence comes closer to change. Throughout this argument you can therefore see, in a wonderful way, the confirmation of what you find in Moses, 'I am who [I] am.'⁵

This passage can be read against the background of a passage in Al-Ghazali's *Metaphysics*, in which he attributes divine Intelligence to angels, which are capable of transmitting this intelligence to every level of the animated cosmos. In his *Metaphysics* Al-Ghazali explains the order of the heavens in the cosmos as follows:

If however one would ask how their order can be understood, it should be said that: since out of the first [being or principle] comes into being pure intelligence, in which there is duality, as has already been said: one of which belongs to it in virtue of the first [being]; the other of which belongs to it in virtue of itself; therefore the

angel and the heaven originate from it [intelligence]. The angel however is understood to be pure intelligence; it is fitting however that that which is nobler originates from a form that is even nobler. Intelligence however is nobler, given the fact that the form it has from the first [being or principle] is necessarily nobler. As a result, from it originates a second intelligence, in so far as it is considered from the viewpoint of necessity, and from that comes the highest heaven in so far as it is considered from the viewpoint of the possibility, which inheres in it as matter. From the second intelligence, however, originates the third [intelligence] and the sphere of the Zodiac. And from the third intelligence originates the fourth and the sphere of Saturn, and from the fourth the fifth and the sphere of Jupiter; and, from the fifth the sixth and the sphere of Mars, and from the sixth the seventh and the sphere of the Sun; and from the seventh the eighth and the sphere of Venus, and from the eighth the ninth and the sphere of Mercury, and from the ninth the tenth and the sphere of the Moon. And in this way all the heavens are complete. But those who are nobler, with the exception of the first [being or principle], originate in the number of ten and nine, [that means] ten intelligences and nine heavens. This is true, unless the number of the heavens is bigger than nine: if it were bigger, then it will be fitting also to increase the number of intelligences, in order to complete the number of the heavens.⁶

In this quotation Al-Ghazali gives a Pythagorean order, in which the emanation of numbers is identical with the principle of order in the cosmos. Ficino used Al-Ghazali's Pythagorean theory for the first time in his *Theologia Platonica* (Schmidt-Biggemann 264–66). Within the Pythagorean order the whole cosmos is interpreted as an expression of numerical value and corresponding ideas. Within this order angels have the role of transmitters of the divine Intelligence through the whole cosmos. Al-Ghazali's cosmology is an animated, dynamic hierarchical system, in which the divine Intelligence results in the first and most important sphere above the ethereal heaven, viz. that in which the divine Intelligence perceives the angels. Next in the hierarchy comes the first ethereal heaven, which is inhabited by the angels of the *Intelligentia secunda*. The second heaven, subsequently, the sphere of the Zodiac, is inhabited by the angels of the

Intelligentia tertia. The third heaven, the sphere of Saturn, is inhabited by the angels of the *Intelligentia quarta*, etc. This results in the following schematic representation of the harmonic cosmos:

Intelligentia nuda	sphere which discerns angels	necessitas + forma formarum
Intelligentia secunda	1 st ethereal heaven	possibilitas + materia
Intelligentia tertia	2 nd heaven	Zodiac
Intelligentia quarta	3 rd heaven	Saturn
Intelligentia quinta	4 th heaven	Jupiter
Intelligentia sexta	5 th heaven	Mars
Intelligentia septima	6 th heaven	Sun
Intelligentia octava	7 th heaven	Venus
Intelligentia nona	8 th heaven	Mercury
Intelligentia decima	9 th heaven	Moon

Although less explicitly stated in his *Compendium in Timaeum*, it is highly probable that Ficino's philosophy of cosmic harmony is based on a similar conception. I shall come back to this point in the second half of this study. Ficino used Al-Ghazali's concept of angels as intermediaries between God and man in order to reconcile the *Bible* with the *Timaeus*, without abandoning all the possibilities that are given to man in the Neoplatonic interpretations of Plato's source. Angels—in Ficino's view God's ministers, who emanate directly from God, their Creator—are an intermediary kind of being in a cosmic hierarchy that allows man to have direct contact with his Creator and direct knowledge of creation. In this way man is given a key position in the creation, which enables him to know the whole cosmos and its Creator and to interact, for example by means of music, on every level of it.

The human soul, thus situated between the changeable world of nature and the eternal world of God, participates in the nature of the cosmic soul (*Cambridge History of Renaissance Philosophy* 571). Like the World-Soul, it is joined to a corruptible body by the unifying power of the spirit (on the one hand) and (on the other) of the souls of the spheres, stars, demons and angels. In Ficino's philosophy man is a microcosm, imitating God with unity, the angels with Intelligence, soul with reason, brute animals with sensation, plants with nutrition and inanimate things with simple being: he is the true bond of all things. Man, therefore, is capable of ascending in thought from simple knowledge to knowledge of the divine ideas in the Mind of its Creator.

Jabir ibn Aflah's criticism of Ptolemy's *Almagest* as a source for Ficino's transformation of the tradition of the harmony of the spheres

Ficino's ideas about the close relationship of the music of the spheres and music on earth are partly based on a passage in the *Timaeus*, in which Plato explains the function of hearing in the process of obtaining knowledge of the cosmos. After Plato has discussed that the principal function of sight is to allow the human being to observe 'the circuits of intelligence in the heavens', and to 'profit by them for the revolutions of our own thought, which are akin to them', so that we can come to 'reproduce the perfectly unerring revolutions of the god and reduce to settled order the wandering motions in ourselves', Plato continued his argument with the saying that sound and hearing are given to man for the same purpose (Cornford 158-159). In reverse order music and music theory are in Ficino's philosophy, in addition to this, divine gifts by way of which man is able to gain further knowledge about the structure of the cosmos. For his knowledge of the harmonic principles of the cosmos Ficino, therefore, is not only dependent on his own sense of hearing and the music of his own time. His belief in the existence of a *prisca theologia*, in which the secrets about the harmonic structure of the cosmos are handed down to initiates for centuries, makes it also possible for Ficino to use the perennial wisdom of his predecessors.

In explaining how the Demiurge created the World-Soul according to numbers—one of the basic doctrines in the myth of creation in Plato's *Timaeus*—Ficino demonstrates a profound knowledge of the sources of the commentary tradition, but at the same time he has to admit that the details of this numerical process are never explained sufficiently by Plato or the Platonists, and therefore he is not able to explain this process with any certainty himself (*CiT* XXXIII, 1459). In order to explain how the planetary order imitates the structure of the World-Soul on the physical level of the cosmos, Ficino first of all has to make a substantiated choice between the planetary orders of the Pythagoreans and the Platonists. Ficino, therefore, starts to comment on the Pythagorean concept of the harmony of the spheres, which is based on the following order of the celestial bodies: Earth, Moon, Mercury, Venus, Sun, Mars, Jupiter and Saturn. The same order is used in the schematic conception of Al-Ghazali's cosmos, as mentioned above. The Pythagoreans, in contrast with the Platonists, measured the harmony of the planetary spheres only with the proportions of three intervals: the octave (2:1), the the fifth (3:2) and the fourth (4:3). The spatial interval between the earth and the sun is represented in their system by the musical interval of the

fifth; the intervals between the earth and the moon and between the sun and the fixed stars are represented by the fourth; and therefore, the interval between the earth and the firmament, which is the sum of the fifth and the fourth, must be an octave. Ficino tries to convince his readers that this Pythagorean concept of the harmony of the spheres is wrong, first, because it is based on a wrong order of the planets, and, second, because the musical possibilities of a planetary symphony are highly restricted within the Pythagorean tradition.

As a faithful follower of Plato, Ficino defends the alternative Platonic order of the planets in which the sun is next to the moon, and in which, according to him, more musical consonants are accepted. Ficino continues his explanation of astronomical aspects of the harmony of the spheres by saying that the Pythagorean order of the planets, which laid the foundation of the Ptolemaic world picture, has already been disproved by the great mathematician Geber, the Latinized name of the twelfth-century Islamic astronomer Jabir ibn Aflah, who in his criticisms of Ptolemy's astronomy on empirical grounds proved the sun to be the closest celestial body to the moon (Duhem 2: 172).

Where we, however, above, in the Platonic and Aristotelic way, place the moon next to the sun, let the inventiveness of Ptolemy not detract you from this worldview. The eminent mathematician Geber [viz. Jabir ibn Aflah] in fact unsettled all of this [viz. the Pythagorean order of the planets accepted by Ptolemy]: with meticulous measurements and precise instruments he proved the sun to be closest to the moon.⁷

Although Jabir ibn Aflah was not in the first rank of Islamic scholars, he is important in the history of the development of mathematics and cosmology in the Western world, since his works were translated into Latin, and so became available to European scholars of the Middle Ages and the Renaissance (Al-Ishbili Abu Muhammad Jabir ibn Aflah 1–2). Jabir ibn Aflah's criticism of Ptolemy's *Almagest*, which appeared in his most famous work *Islah al-Majisti* (i.e. 'Correction of the Almagest'), were well known in the fifteenth century. Jabir ibn Aflah's most famous criticism of Ptolemy concerned his placement of Venus and Mercury below the sun. Ptolemy claimed that these planets could never be on a line between an observer on earth and the sun, but Jabir ibn Aflah states that this was an error, and that Venus and Mercury are above the sun. In this place, the question whether Ficino had direct access to a Latin translation of

Islah al-Majisti, or whether he knew the criticism of Ptolemy from other sources, has to be left unresolved. Once again Ficino quotes an Islamic scholar in his *Compendium in Timaeum*, but this time he makes explicit reference to his source. Ficino uses Jabir ibn Aflah to prove that Ptolemy has wrongly placed Venus and Mercury below the sun. By means of using this famous empirical argument of ibn Aflah, Ficino once and for all settled the predominating question about the right order of the planets, which for centuries had governed the tradition of the harmony of the spheres.

Like Macrobius, Ficino believes that the Platonic numbers of the Timaeian scale are the most satisfactory description of planetary distances expressed with the help of intervals. The way in which Plato described in the *Timaeus* the division of the World-Soul into harmonic intervals, and the particular numbers that he used for it, yield, once again, interpretative problems for Ficino. In order to solve them while remaining faithful to Plato, Ficino has to come up with ingenious solutions. After a demonstration of a critical approach to the sources, Ficino, in imitation of Macrobius, applies the numbers that belong to the intervals of the scale of the World-Soul to the planets (Cornford 66–72; Godwin 64–70). Ficino applies to every planet a tone of the musical scale, in order to demonstrate that the order of the planets is created according to the harmonic ideas of the Demiurge. On the basis of existing sources Ficino calculates planetary distances by multiplying the numbers of Plato's *Timaeus*-scale and corresponding numbers (Haar 351–362). He attributes the number nine to Mars and eight to Jupiter, so that the heavier planets Jupiter and Saturn are each to be designated by cubic numbers (Haar 351). In this way the Platonic planetary order (Earth, Moon, Sun, Venus, Mercury, Jupiter and Saturn) corresponds not only with the proportions of the octave, fifth and fourth, the Pythagorean consonants, but also with the proportions of the tone and the semitone. On the basis of complicated calculations with this set of consonants, Ficino, after all, is even capable of finding a justification for the consonances of the third and the sixth, which were never admitted as consonants in the tradition of the harmony of the spheres before.

Ficino has no doubt whatsoever about the presence of music in the proportionally spaced spheres of which the divine Creator constituted the cosmos. Similar to the World-Soul, the body of the cosmos, which Ficino conceives of as a celestial lute, vibrates in musical proportion, its low tones produced by slower motion, and its higher tones coming from faster movements (*CiT* XXIX, 1453). Although Ficino—from his acquaintance with the main sources of the tradition of the harmony of the spheres—never mentions this explicitly in

the *Compendium in Timaeum*, he must have known that these higher and lower tones were conceived of as a musical scale, a tone of which was attributed to every planet in the cosmos. In a few passages in Ficino's commentary he does in fact show that he knew that within the tradition of the harmony of the spheres there is reference to at least two such scales: one, based on annual motion, having Saturn as lowest tone, the second, on the contrary, calculated from daily motion, with the moon as lowest tone—the other planets following in the given order of the scale. Ficino does not give these scales in full detail, because he seems not particularly interested in the individual pitches that are generated by the planets (Haar 352). In his interpretation of the concept of cosmic harmony Ficino concentrates on the mysterious unity that exists in the multiplicity of celestial sounds. He replaces the traditional notion of the harmony of the spheres with a theory in which each planet is able to produce more than one tone:

And in heaven we will find the low sounds mixed with the high, and the same orbs producing by one motion a high sound, by another a low one. Also from enormous globes, enormous sounds; from divine globes, divine sounds and by the same token from multiple revolutions multiple [tones]. And as beyond the seventh tone there is a return to the same, so beyond the seven distinct orbs of the planets there is a revolution of all [orbs] in one orb, which in itself wonderfully comprises in the same way the number seven.⁸

The ideas about the planetary symphony expressed in this passage makes it likely that Ficino was acquainted with Giorgio Anselmi's *De Musica* (Godwin 145–151); in any case he conceives of the celestial music of the planets as modal or polyphonic instead of as a single scale. The mention of 'divine globes' in this quotation is a hint of the celestial hierarchy of angels inhabiting the spheres mentioned above. One particular passage in the *Compendium in Timaeum* indicates that Ficino regards consonances as simultaneously sounding intervals, instead of as melodic intervals, as they were traditionally conceived within the tradition of the harmony of the spheres:

For if from the sound of a zither there is much resonance in another zither that is similarly tuned, and from a vibrating string a similar vibration passes at once into a string equally tuned, who would doubt that from several voices joined in one proportion there

suddenly arises one, which is as it were the common form of all. ... Since such a union is pleasing neither from the absorbing nor the taking over [of sounds], the only possibility is to assume that it gives pleasure only because from a moderate [viz: well tempered] composition [of sounds] some new and effective sound results.⁹

Ficino refrains in his *Compendium in Timaeum* from explaining why he does not examine in greater detail the function of a celestial scale, in which to every planet a particular tone of the musical scale is attributed, which is used in human music on earth. Supposedly, this does not indicate that he did not believe in the existence of cosmic harmony and a kind of planetary music anymore, but rather that he imagined this music to be a harmony of simultaneous sounds, in which the linear concept of the scale did not play a role of particular importance. Probably, because Ficino was devoted to representing God's unity that is reflected in the staggering richness of manifestations in nature as precisely as possible, he abandoned the simple concept of planets producing only a single pitch, because this notion could not express the richness and infinite possibilities of God's creation. Ficino, therefore, combined the medieval sound of a choir of angels with the classical planetary symphony to express his own view on cosmic harmony.

The planets, which are arranged in a traditional way according to the ideal numbers and musical intervals of the scale that is given in Plato's *Timaeus*, sound in Ficino's *Compendium in Timaeum* not in the widely-spaced melodic intervals of the scale that can be found in Plato's *Timaeus*, but in a simultaneous sound of more than one tone, which Ficino considers to be a very effective representation of the perfect unity of God, mirrored in the multitude of his creation. Ficino's transformation of the traditional concept of the harmony of the spheres represents the late fifteenth-century polyphony and the corresponding music theory of the time. Ficino's interpretation of Plato's ideas about cosmic harmony is determined first of all by his own time and his own beliefs. The character of the harmony of the spheres in Ficino's *Compendium in Timaeum* is, above all, defined by its earthly imitation: the music that was performed in Italy in the fifteenth century. Plato's *Timaeus* and the commentary tradition on the dialogue are mainly used as an effective mirror in which this picture of Ficino's own vision on cosmic harmony could be reflected.

* * *

Ficino's *Compendium in Timaeum* was to exert remarkable influence on the continuation of the tradition of the harmony of the spheres. Not only did it set the standards for any future commentary on Plato's *Timaeus* in the Renaissance, but it also determined the context of Platonic philosophy and music theory for more than a century and half. By means of adding a new potential of Gnostic, magical and Islamic knowledge to the traditional knowledge of the harmony of the spheres, the concept of cosmic harmony became not only richer and more powerful, but it started also to endure enormous internal conflicts (Bono 42–47). Already in the sixteenth century there is evidence that Ficino hoped in vain to have reconciled once and for all the biblical account of creation in Genesis with the myth of creation in Plato's *Timaeus*.

On the basis of the two examples of usage of Islamic sources in Ficino's *Compendium in Timaeum* it is tentatively concluded that Ficino neither used these sources to promote a more empirical style of philosophising, nor deliberately kept silent about his usage of Islamic sources. Ficino used the Islamic sources, like any other source, mainly to find convincing foundations for his own philosophical arguments. The only striking contrast with the majority of his medieval predecessors was that Ficino did not conceive of Islamic scholars as heathens anymore, but found in their writings a kind of wisdom that he considered consonant with the Mosaic wisdom of the Bible and the *Timaeus* of Plato.

Implicit in Ficino's theory of knowledge of a harmonic universe as given in his *Compendium in Timaeum* is his conviction that a proper understanding of music, either in written notes or in sounds, will yield true and essential knowledge about the cosmos. Such knowledge may for the present be hidden from human understanding either because humans do not have access to the true harmonic structure of things, or because they lack the requisite spiritual qualities or skills to interpret music correctly. Nonetheless, such a theory supposes the existence of a pure, uncorrupted harmonic language as the key to all knowledge, which humans may unlock if only they can uncover its existence and recognize it for what it truly is.

Such a theory of a harmonic language in which the Creator has written his creation led to Ficino's attempt to uncover the archetypal harmonic language and to unveil the mysteries contained within it. In his *Compendium in Timaeum* Ficino therefore placed much emphasis upon both the exegesis of his sources and illumination as instruments in his search for harmonic knowledge. Through

the exegesis of the *Timaeus*, amongst other sources, Ficino tried to remove the manifest meaning of the texts in order to uncover its deeper sense. Ficino was convinced that he was guided in his exegetical practice by way of illumination. God had given illumination as a gift to certain privileged human beings, who together form the principal characters in the tradition of the *prisca theologia*—of which Ficino believed he was the latest link—to unveil the mysteries contained in the cosmos, in human nature as well as in music.

In the Middle Ages, the theory of the harmony of the spheres did not lead to magic, as it did for Ficino. In this period philosophers, who dedicated themselves to the harmonic secrets of the universe, often came to the conclusion that the proper understanding of them was beyond the grasp of human understanding. But by way of linking a medieval Neoplatonic theory of knowledge with magic, in Ficino's theory of the harmony of the spheres, for the first time comprehensive knowledge of the harmonic structure of the cosmos became possible. But in reaching this goal, Ficino's theory of cosmic harmony was threatened by the same driving force of magical powers, which was the necessary condition of its explanatory power (Bono 44). Magic constituted a variety of practices and traditions that partly were still known and in use in Ficino's time. Ficino's endeavour to define a benevolent kind of spiritual magic, which served to enlighten man, nonetheless was associated by his contemporaries and future readers with questionable practices and suspect traditions. Although Ficino in his *Compendium in Timaeum* often gives disclaimers intended to distance his own beliefs from ones that were esteemed as pagan and dangerous, the passages in his commentary which deal with angels and demons open up the possibility that music may be used in magical rituals and other suspect practices.

Because angels and demons have a structural function in Ficino's harmonic cosmology (in the magical interplay between different parts and levels of the cosmos), Ficino could not easily solve the dilemma that was involved in his acceptance of magic in the context of a Neoplatonic theory of knowledge. Even the sixteenth-century editions of the *Compendium in Timaeum*, which were stripped of all passages in which angels and demons appeared, brought no real solution to this problem, because together with the malevolent demons, the benevolent angels, which guaranteed the transmission of cosmic harmony, were removed (see, for example, the 1557 edition of *CiT* by Antonio Vincent). The possibilities for negative uses of magical powers undermine in a structural way the credibility of Ficino's claim that his contribution to the tradition of *prisca theologia* would lead to certain knowledge of the harmonic structure of the

cosmos, because he is not able to differentiate between good powers, which will lead to true knowledge, and bad powers, which will lead to deception.

By linking a Neoplatonic theory of knowledge to magic, Ficino created a tension between a view of music and language as the keys to knowledge of the cosmos, and an alternative view in which sounds and words are the direct means by which humans are able to apply occult powers. Because the boundaries between the magical and non-magical uses of Ficino's Neoplatonic theory of knowledge cannot be sharply drawn, the internal tensions between his theory of knowledge and his magical beliefs and practices also created problems for the belief in the existence of a music of the spheres. Although Francesco Patrizi, an admirer of Plato as well as Ficino, tried, for example, in the sixteenth century to purify Ficino's philosophy from magical elements, he was not able to disentangle Ficino's beliefs about eternal truths, wisdom and magic, because they are too closely intertwined (Gerl 189–207). When in the sixteenth and seventeenth century, in the field of philology, the false authority of important members of the canon of the *prisca theologia* is demonstrated, this turned out to be one of the explosive devices that were beginning to undermine the belief in a *prisca theologia*, and, with that, in the real existence of a harmony of the spheres.

NOTES

1. '... et in Timaeo naturam tractans, surgit saepius in divina. Neque iniuria divinitatem simul naturamque copulat. Natura enim divinitatis est instrumentum. Atque ita vel de naturalibus agit divine, quemadmodum Aristoteles vel de divinis naturaliter agit. Interserit quoque mathematica tanquam utrorumque media, divinorum scilicet atque naturalium. Quae videlicet, per numeros quidem divina, per mensuras vero significant naturalia.' (*CiT* I, 1438; the translations of passages of Ficino's *Compendium in Timaeum* are my own.)
2. 'Forte vero nec fuerit a Platonice alienum dicere firmamento referri mentem...' (*CiT* XXXVIII, 1462).
3. 'Praeterea ubi ait ... Fecit deus mundum viventem, animatum², intellectualem. Ubi enim dicit viventem, designat vitam quandam naturalem per mundi corpora sparsam, una cum corpore mundi extensam, mobiliterque agentem. Ubi vero ait intellectualem, intelligit intellectus angelicos, qui

proprie regendis sphaeris praefecti, et indivisibiles sunt secundum locum, et immutabiles secundum tempus; opposito se modo habentes, atque naturalis vita formaque corporea divisibilis atque mutabilis.' (*CiT XXVIII*, 1452)

4. 'Et qua ratione in mundo intelligibili quod et ipsum ens ipsumque vivens nominant; principia et ideas suscipit naturae quadruplicis, in quatuor similiter plagas digerere mundum, quarum prima a primo caelo postque caelum per ignis sphaeram usque ad aeris principium protendatur; secunda inde ad aerem usque medium; tertia inde ad terram; quarta vero sit terra; atque huiusmodi partitioni quatuor in qualibet plaga respondeant exercitus rationalium habitantium, deorum scilicet mundanorum; item angelorum, deinde daemonum; postremo particularium animarum.' (*CiT XXI*, 1447)
5. 'Mandat ergo posthac architectus mundi filiis suis, id est animabus sphaerarum stellarumque et daemonum, vel etiam inferioribus angelis, ut ad imitationem sui mixtionem sub luna rerum aggrediantur; hominique subiiciant omnia; rationalemque eius animam, ab ipso acceptam, corpori caduco concilient, per vitam quandam irrationalem, partim ab ipsis, partim ab anima hominis dependentem. Notabis autem in ipsis dei verbis, quicquid proxime fit a deo, sempiternum esse; et quicquid ulla ratione componitur, quatenus compositum est, esse etiam dissolubile; sed quatenus per divinam voluntatem composita quaedam ita conflantur, ut in eis unitas superet multitudinem, indissoluta servari. Notabis insuper, ubi ait deum in suo habitu permanere dum mandat, ministros autem sequi, nihil mutabilitatis in deo esse, dum mobilia regit et movet; in ministris autem eius providentiam esse mutationi cuidam propinquiore. Denique in his omnibus mosaicum illud: Ego sum qui sum, cognosces mirifice confirmatum.' (*CiT XXXXI*, 1463).
6. 'Si quis autem quesierit quomodo potest discerni eorum ordo, dicetur quod ex primo provenit intelligencia nuda in qua est dualitas, sicut predictum est, unius quidem que est ei ex primo, et alterius quod est ei ex se ipsa; igitur provenit ex ea angelus, et celum. Intelligitur autem angelus intelligencia nuda; oportet autem ut id quod est nobiliter proveniat ex forma nobiliore. Intelligencia vero nobilior est; forma autem quam habet ex primo scilicet, necessita est nobilior; igitur provenit ex ea intelligencia secunda secundum quod consideratur esse necesse, et provenit ex ea celum supremum, secundum considerationem possibilitatis que est ei sicut

materia. Ex intelligencia vero secunda, provenit intelligencia tertia et circulus signorum. Et ex intelligencia tertia, provenit intelligencia quarta, et circulus saturni, et ex quarta quinta et circulus iovis. Et ex quinta, sexta, et circulus martis, et ex sexta, septima, et circulus solis. Et ex septima octava, et circulus veneris, et ex octava nona, et circulus mercurii, et ex nona, decima, et circulus lune et sic completum est esse omnium celestium simul, sed ea que sunt nobiliora excepto primo, provenerunt decem et novem, decem intelligencie, et novem celi; hoc autem verum est, nisi numerus celorum fuerit maior isto; si enim fuerit maior, oportebit etiam addi numero et intelligenciarum ad complendum numerum omnium celorum.’ (121).

7. ‘Ubi autem in superioribus Platonico et Aristotelico more solem lunae proximum collocamus, ne te ab hac sententia Ptolemaei machinamenta detereant. Nam summus mathematicus Geber labefactavit haec omnia, exquisitissimisque mensuris et instrumentis solem esse lunae proximum comprobavit.’ (*CiT* XXXV, 1461).
8. ‘Invenimusque graves in caelo sonos mixtos acutis, eosdemque orbes altero quidem motu acutum tonum edere, altero vero gravem. Item ex ingentibus globis ingentes, ex divinis divinos, ex multiplicibus revolutionibus pari ratione multiplices. Et quemadmodum ultra septimum sonum revolutio fit in idem, sic super planetarum septem distinctos orbes, omnia revolvi in unum orbem, in seipso eiusmodi septenarium mirabiliter complectentem.’ (*CiT* XXXII, 1457).
9. ‘Nam si ex sonante cithara in citharam similiter temperatam resonat repente nonnihil, et ex chorda vibrata, statim in chordam aequae tentae transit vibratio similis, cui nam dubium sit ex pluribus vocibus una quadam ratione conflatis unam subito nasci quasi formam communem cunctis; ... Cum vero unio vel ex absorbente vel ex occupante non placeat, reliquum est, ut sola placeat, quae nova et efficax ex moderata quadam conflatione resultat.’ (*CiT* XXXI, 1456).

WORKS CITED

PRIMARY PRINTED WORKS

- Al-Ghazali. *Algazel's Metaphysics: A Medieval Translation*. Ed. J.T. Muckle. Toronto: St. Michael's College, 1933.
- Ficino, M. *Compendium in Timaeum. Opera Omnia*. Basel 1576. Facsimile ed. P.O. Kristeller. Torino: Bottega d'Erasmus, 1962. 2: 1438–1485.
- Ficino, M. *Compendium in Timaeum*. Osimo: Biblioteca dei frati minori conventuali della Basilica di S. Giuseppe da Copertino, Antonio Vincent, 1557.

SECONDARY WORKS

- Allen, M.J.B. 'Ficino's interpretation of Plato's *Timaeus* and its myth of the demiurge'. *Supplementum Festivum: Studies in Honor of Paul Oskar Kristeller*. Ed. J. Hankins, J. Monfasani, and F. Purnell, Jr. Binghamton, N Y: Center for Medieval and Renaissance Studies, 1987. 399–439. Rpt. *Plato's Third Eye. Studies in Marsilio Ficino's Metaphysics and its Sources*. Ed. M.J.B. Allen. Aldershot: Variorun 1995. Chapter 11.
- Bono, J.J. *The Word Of God And The Languages Of Man: Interpreting Nature In Early Modern Science And Medicine*. Madison: University of Wisconsin Press, 1995.
- Copenhaver, B.P. and C.B. Schmitt, eds. *Renaissance Philosophy*. Oxford: Oxford University Press, 1992.
- Cornford, F.M. *Plato's Cosmology: The Timaeus Of Plato Translated With A Running Commentary*. London: Routledge and Kegan Paul, 1937.
- Duhem, P. 'L'astronomie latine du moyen âge'. *Le système du monde: histoire des doctrines cosmologiques de Platon et Copernic*. Paris: Hermann, 1957–1959. 2me partie.
- Etienne, A. 'Visages d'un interprète: Marsile Ficino et le Timée: De la découverte à la réception de la 'physique' platonicienne: Une étude historique et thématique du Compendium in Timaeum'. 2 vols. Diss., Lausanne, 1998.
- Fakhr, M. *A History of Islamic Philosophy*. New York: Columbia University Press, 1970.

- Gerl, H.B. 'Humanistische und geometrische Sprachphilosophie: Ein Paradigmenwechsel von Leonardo Bruni zu Francesco Patrizi'. *Zeitschrift für Philosophische Forschung* 36.2 (1982): 189–207.
- Godwin, J. *The Harmony Of The Spheres, A Sourcebook Of The Pythagorean Tradition In Music*. Rochester, Vt: Inner Traditions International, 1993.
- Hankins, J. 'The Study Of The *Timaeus* In Early Renaissance Italy'. *Natural Particulars: Nature and the Disciplines in Renaissance Europe*. Ed. A. Grafton and N. Siraisi. Cambridge, Mass.: MIT Press, 1999. 77–119.
- Haar, J. 'Musica Mundana: Variations On A Pythagorean Theme'. Diss., Harvard University, 1960.
- Kristeller, P.O. *Eight Philosophers of the Italian Renaissance*. Stanford: Stanford University Press, 1964.
- Schmidt, C.B. and Q. Skinner, eds. *Cambridge History Of Renaissance Philosophy*. Cambridge: Cambridge University Press, 1988.
- Schmidt-Biggemann, W. *Philosophia perennis: Historische Umrissse abendländischer Spiritualität in Antike, Mittelalter und Frühe Neuzeit*. Frankfurt am Main, 1998. [English edition.] *Philosophia perennis: Historical Outlines of Western Spirituality in Ancient, medieval and Early Modern Thought*. Archives internationals d'histoire des idées, vol. 189. Dordrecht: Springer, 2004.
- Tomlinson, G. *Music in Renaissance Magic: Toward a Historiography of Others*. Chicago: University of Chicago Press, 1993.
- Walker, D.P. *Spiritual and Demonic Magic from Ficino to Campanella*. London: Warburg Institute, 1958.