

Significance of the Equinoxes in Abraham Ibn Ezra's Cosmology*

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The Jew from Sepharad, Abraham Ibn Ezra (1092-1165/67) greatly contributed to the development of Hebrew grammar and exegesis, and to the dissemination of Andalusian sciences in the Hebrew communities of Western Europe. Of particular interest is his integration of scientific content, notably astronomical-astrological, into his exegetic and religious writings¹. This article considers the significance of the spheres of the equator and the zodiac, the fact that the latter is inclined in relation to the former, and the astronomical phenomenon of the equinoxes in the tripartite structure

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¹ See. S. SELA, *Astrología U-parshanut ha-mikra' ba-haguto shel Abraham ibn Ezra*, Ramat Gan, 1999, and *Abraham ibn Ezra and the Rise of Medieval Science*, Leiden-Boston, 2003; as well as J. RODRÍGUEZ, *La astrología en la exégesis de Abraham ibn Ezra*, Ph.D. diss., Universidad Complutense de Madrid, 2004.

of the universe that Ibn Ezra depicted. Further reflection on the astronomical phenomenon of heavenly bodies moving in inclined planes brings into consideration the human perspective of heavens and the way heavenly bodies affect human destinies, human knowledge and the problem of evil². All these questions seem to have a relevant role throughout Ibn Ezra's scientific, theological, and exegetical writings.

SOME BASIC ASTRONOMICAL CONCEPTS

Greek and Arab astronomers considered the universe embedded in two basic movements that they associated with two big circles: the movement westwards with the equator, and the movement eastwards with the ecliptic. These two big circles or spheres were inclined to one another at an angle of about 23½ degrees. The right circle was the equator, and the inclined the zodiac (ecliptic). All heavenly bodies are placed, observed, and measured in relation to the latter. The points where the two circles intersected were called equinoxes, because at those points night and the day are of equal duration. The two points where the distance between the two circles was greatest were called solstices, one in the north (summer solstice for the northern hemisphere), and the other in the south (winter solstice for the northern hemisphere).³

² Sela devoted part of an article ("Abraham Ibn Ezra's Astrological Cosmological Exegesis", *Daat: A journal of Jewish philosophy and Kabbalah* 47 (2001), pp. 5-34, on pp. 28-34) to the role of these spheres in the explanation of the double motion of heavens. However he missed the most important significance of these spheres and their intersection in Ibn Ezra's cosmology. The purpose of this article is to explore and explain this significance.

³ A clear account of this may be found in Ptolemy, *Almagest* (translated by G.J. Toomer, Princeton University, 1998, pp. 45-47 [H26-27 and H29-30] and 82-83 [H102]), and especially, *The Hypotheses of the Planets* (see Bernard R. Goldstein, "The Arabic Version of Ptolemy's Planetary Hypotheses", *Transactions of the American Philosophical Society*, New Series, 57.4, 1967, pp. 3-55). Among the Arab astronomers, Al-Biruni, *The Book of Instruction in the Elements of the Art of Astrology*, whose first chapters are devoted to geometry, arithmetic, astronomy and geography as introductory sciences to the exercise of astrology (edited and translated by Ramsay Wright, London, 1934, pp. 22 [68], 43-45 [120-122], 47-48 [127], and 55-56 [138-139]). The Jew Bar Hiyya mentions it in his *Sefer tzurah ha-aretz* (J.M. Millás Vallicrosa, *La obra forma de la tierra*, Madrid-Barcelona, 1956, pp. 3, 41, and 53). Al-Biruni and Bar Hiyya referred to the existence of

According to most of the Arab and Hebrew astronomers who were known in Ibn Ezra's time,⁴ the whole system of the universe consisted of eight concentric spheres, one for each stellar body. The usually accepted order was: fixed stars, Saturn, Jupiter, Mars, Sun, Venus, Mercury, and Moon (although some writers stated a different arrangement for Venus and Mercury).⁵ The Earth was a still sphere in the center of this system. All these spheres were considered to be bodies, made of subtle matter and eternal, in contrast with the sublunary world, which was the realm of generation and corruption. Several variants on this scheme were prevalent in the Middle Ages.⁶

a school of astronomers who believed that the westward movement is caused by a ninth sphere and the eighth sphere would only receive it as the remaining lower spheres do.

⁴ For a survey of the transmission of astronomy in the Arabic world, see Willy Hartner, *Oriens-Occidens, Ausgewählte Schriften zur Wissenschafts- und Kulturgeschichte, Festschrift zum 60. Geburtstag*, Hildesheim, 1968; Joshua David Lipton, *The Rational Evaluation of Astrology in the Period of Arabo-Latin Translation ca. 1126-1187 AD*, PhD dissertation, University of California, 1978; D.D. de Lacy O'Leary, *How Greek Science Passed to the Arabs*, London-Boston-Henley, 1979; A. Sabra, "The Andalusian Revolt against Ptolemaic Astronomy: Averroes and al-Bitruji", E. Mendelsohn (ed.), *Transformation and Tradition in the Sciences, Essays in Honor of I. Bernard Cohen*, Cambridge, London, 1984, pp. 133-53; John North, *Horoscopes and History*, London, 1986; B.L. van der Waerden, "The Heliocentric System in Greek, Persian and Hindu Astronomy", *From Deferent to Equant, Annals of the New York Academy of Sciences* 500 (1987), pp. 525-545; David C. Lindberg, *The Beginnings of Western science, The European Scientific Tradition in Philosophical, Religious, and Institutional Context, 600 B.C. to A.D. 1450*, Chicago-London, 1992; Regis Morelon, "General Survey of Arabic Astronomy", Roshdi Rashed (ed.), *Encyclopedia of the History of Arabic Science*, v. I, London and New York, 1996, pp. 1-19, and "Eastern Arabic Astronomy between the eighth and eleventh Centuries", Roshdi Rashed (ed.), *Encyclopedia of the History of Arabic Science*, vol. I, London and New York, 1996, pp. 20-57; Juan Vernet and Julio Samsó, "The Development of Arabic Science in Andalusia", Roshdi Rashed (ed.), *Encyclopedia of the History of Arabic Science*, v. I, London and New York, 1996, pp. 243-275; and Ana Rioja and Javier Ordóñez, *Teorías del universo*, vol. I: *De los pitagóricos a Galileo*, Madrid, 1999.

⁵ Ibn Ezra makes reference to this polemic in his *Sefer ha-te'amim* (Ben Menahem, Jerusalem, 1941, p. 9), although he stated in several places of his writings the Ptolemaic system, see commentary on Psalm 19, M. Cohen, *Mikra'ot gedolot ha-keter (Psalms)*, Jerusalem, 2003, p. 57.

⁶ See Maimonides, *Guide of Perplexes* II 9, where an universe of five spheres is proposed: one for the fixed stars, one for the five planets, one for the Sun, one for the Moon, and one starless above all of them. The Brethren of Purity (Y. Marquet, *La philosophie des Ikhwan al-Safa*, Paris-Milan, 1999, p. 110) believed in a system of eleven spheres: the traditional nine (eight starry and the moving sphere), and the two spheres of the earth and the air that circumsolve the Earth. Ibn Sina (M. Cruz Hernández, *Historia del pensamiento en el mundo islámico, vol. I Desde los orígenes hasta el siglo XII*, Madrid, 1981, pp. 231-234) stated a system of ten spheres: one outermost, the fixed stars, one for

One of these variants supported the existence of a ninth sphere as the cause of the westward movement. Abraham Ibn Ezra was one of those who believed that the diurnal movement of planets and stars depended on a sphere higher than that of the fixed stars:

“We have seen that the spheres are seven, for each one of the seven planets is placed in its sphere. Those that complete their motion in a short time are placed below those that complete it in a longer time. This is so because every circle (of a planet) is inside other and the superior will be always the largest. In addition, we have seen, when one planet is in conjunction with other, that the inferior hides the superior, and the planets hide the stars in the constellations. For this reason we know that the fixed stars, which are innumerable and were classified by astrologers into 48 constellations, are placed above the spheres of the planets. We have found that the stars move from west to east one degree every 70 years.⁷ We have seen that the sphere of the fixed stars and those of the seven planets move every day from east to west, a motion contrary to that of the stars. We know therefore that *something like the form of a sphere (ke-demut galgal ‘elyon)* exists above all of them, moving everything with its own motion. This sphere joins the sphere of the zodiac [*galgal ha-mazzalot* or ecliptic] at two points, which are the equinoxes [*rosh taleh* and *rosh moznayim*], and at those moments night and day are equal. From the vernal point [*rosh taleh*] the Sun always approaches the north [hemisphere] with respect to the equator [*galgal ha-mishor*], the highest [sphere], for the Sun moves on the ecliptic [*qav galgal*]

every planet (Saturn-Jupiter-Mars-Sun-Venus-Mercury-Moon) and the sublunary. Al-Kindi, in his second Letter (G. Bos and Ch. Burnett, *Scientific Weather Forecasting in the Middle Ages, The Writings of Al-Kindi*, London and New York, 2000, p. 245 [19]), enumerates eight spheres above the Earth: one sphere for air and fire together, one for the Moon, one for Venus and Mercury together, one for the Sun, one for Mars, one for Jupiter, one for Saturn, and the last for the fixed stars. The poets Ibn Gabirol and Moshe Ibn Ezra also referred, as did A. Ibn Ezra, to a system of ten spheres in their writings (A. Tanenbaum, “Beholding the Splendor of the Creator: Philosophical Conceptions of the Soul in the Poetry of Abraham ibn Ezra”, F. Díaz Esteban (ed.), *Abraham ibn Ezra y su tiempo*, Actas del Simposio Internacional Madrid-Tudela-Toledo, 1-8 Febrero 1989, Madrid, 1996, pp. 335-344). For the probably source of Ibn Gabirol’s tenth sphere, see Y.T. Langermann, “Cosmology and Cosmogony in *Doresh Reshumot*, a Thirteenth-Century Commentary on the Torah”, *Harvard Theological Review* 97 (2004), pp. 199-227.

⁷ In many places in his writings, Ibn Ezra refers to the movement of precession of the stars. Although many astronomers supported trepidation as an explanation of the change in longitude of the stars, Ibn Ezra is not among them.

ha-mazzalot]. ... Astronomers proved that the stars are not composed of the four elements but their substance is the fifth element [toledet ḥamishit]. The Sun is not hot but it is called so because it generates heat. All the stars generate heat”.⁸

According to Ibn Ezra’s expression, he seems to consider this ninth sphere not exactly a sphere but a different reality, certainly starless and bodiless.

ABRAHAM IBN EZRA’S ASTRONOMICAL SYSTEM

Not only did Ibn Ezra think that there was a ninth sphere in the universe, indeed he believed that the whole system consisted of ten spheres. In this he was following a new tradition among Jewish writers like Moshe Ibn Ezra or Ibn Gabirol (the former seems to have been the introducer of this theory among Jews).⁹ Ten was a very connoted number for Pythagoreans, and for several Neopythagoreans sects, as seen in the Brethren of Purity’s writings, which clearly influenced Ibn Gabirol, Moshe Ibn Ezra, and probably A. Ibn Ezra.¹⁰

Ibn Ezra’s cosmological system is clearly expounded in his commentary on Exod 3:15:

...In the same way the nine spheres, which are glorious bodies that remain changeless. The tenth [sphere], which is holy, is called the Throne of Glory, because its power is ubiquitous. It is the powerful (*ha-taqif*) and encircles the bodies [of the whole of spheres]...

You must know that there are three worlds (*‘olamot*). One is the lower [world]. It consists of many levels, but they are comprised

⁸ N. Ben Menahem, *Sefer ha-te’amim*, Jerusalem, 1941, p. 2-3. This edition has some problems, but the quoted fragment is correct.

⁹ See note 7. For the possible sources of the tenth sphere in Ibn Gabirol and Moshe Ibn Ezra, see Raphael Loewe, “Ibn Gabirol’s Treatment of Sources in the Kether Malkhut”, S. STERN and R. LOEWE (eds.), *Studies in Jewish Religious and Intellectual History*, London-Alabama, 1979, pp. 183-194; and Adena Tanenbaum, “Nine Spheres or Ten? A Medieval Gloss on Moses Ibn Ezra’s *Be-Shem El Asher Amar*”, *Journal of Jewish Studies* 47.2 (1996), pp. 294-310, especially notes 29 and 45.

¹⁰ Ibn Ezra quotes almost verbatim from one of their letters (commentary on Eccl 1: 9).

only in three [groups]: one is that of metals, which are seven, corresponding to the seven planets; above them are the plants with numerous levels; and above them the animals, whose levels are numerous. Man is alone in the uppermost level in the lower world...

The middle world consists of different levels. The five planets are the highest levels for they persist in their essences. They neither perish nor diminish, nor does their motion change, it neither increases nor decreases, nor do they ascend or descend. Only according to the heavenly configuration (*ma'arekhet*), they have many changes, for a planet is sometimes on the ecliptic (*qav ha-mazzalot*), sometimes on the left or on the right [of the ecliptic], much or little. Sometimes (a planet) ascends on its epicycle (*galgal ha-qatan*), or on its eccentric (*galgal gadol*), whose center is far from the center of the Earth. At other times the planet's sphere ascends or descends, [sometimes a planet] is swift and sometimes it is slow; sometimes stationary and sometimes retrograde, [all of this] always with respect to the Earth. Sometimes it is visible and sometimes it is invisible; sometimes it is eastern and sometimes western. The relationship (*'erekh*) [of a planet] [with other planets], also with the fixed stars above and with the Moon below, is always changing incessantly, for it joins [them] in one of the seven aspects (*mabetim*). ...As a result of these changes [in the heavenly configuration of the planets] every creature in the lower world changes in essence and mostly in accidents. However [the planets] do not change either in essence or in light. For this reason the Moon is below them, for all their accidents are more frequent in it. This is because is [the planets and the Moon] have two circles whose center is different from the Earth's center. In addition, their movement is like the epicycle's movement, contrary to the eccentric's movement. The Moon does not have light of its own, but the Sun's light. ... Above the planets are the stars of the zodiacal sphere, which are fixed on a unique sphere and do not move as the planets do, and do not change either their latitude or their mutual proportion (*'erekh*). They move altogether without [mutual] increase or decrease. Their longitude in relation to the Earth is [always] the same, and the change in their visibility is with respect to one's place on the Earth, and to the Sun's movement.

The upper world is the world of the holy angels, who, like man's soul, are neither bodies nor are in a body. Their ranks are beyond [human] sciences, which are vile [with respect to them].

This entire world is glorious and the whole of it perseveres changeless; there is no movement [in it] either through change or in disposition, although it does not exist by itself but only through the unique glorious One alone”.¹¹

The main influence evident in this long quotation is that of Ptolemy (2nd century) and his mathematical astronomy as it was exposed in his *Syntaxis mathematica*, known in the Middle Ages as the *Almagest*,¹² and the *Hypotheses of the Planets*, a book in which Ptolemy proposed a *physical* astronomy.¹³ Ibn Ezra frequently refers to this Hellenistic scientist, whose theories he must have been familiar with by means of any of several Arabic translations or commentaries. An enumeration of the different components appearing in Ibn Ezra’s text shows that his system is basically that of Ptolemy with new elements.

The Ptolemaic basis of Ibn Ezra’s scheme is the following:

- A still center (the Earth), which is the realm of the four elements and their combinations and the center of the universe.
- Seven spheres of the planets and luminaries, each moving eastward with its own cycle.

¹¹ A. WEIZER, *Perushei ha-Torah le-Rabbeinu Abraham ibn Ezra (Shemot)*, Jerusalem, 1977, pp. 26-27 and 32-35. I am indebted to Gad Freudenthal, who generously read the English version of this long paragraph and helped to improve it.

¹² Al-Tabari (8th-9th centuries) was the first to translate the *Syntaxis mathematica* by Ptolemy from the original Greek, and later Ibn Yusuf (9th century) translated it from a Syriac version. For references to Ptolemy in Ibn Ezra’s writings, see commentaries on Amos 5:8 and on Lev 25:9, as well as his books *Sefer ha-te’amim*, *Sefer ha-‘ibbur*, and *Sefer keli ha-neḥoshet*, among many other places. It is difficult to establish the Arabic sources from which Ibn Ezra learnt the Ptolemaic astronomy, for two main reasons: first, he mentions a varied and eclectic panoply of authors and theories in his writings, and, second, these Ptolemaic theories were common knowledge among the learned Muslim and Jewish circles that he certainly frequented in his time. Ptolemy (*Tetrabiblos*) also appears among the astrological sources that Ibn Ezra mentions, but he also refers to other Hellenistic astrologers (Dorotheos Sidonis, Vettius Valens, etc.), which Arab astronomers translated into Arabic directly or by means of Syriac and Pahlevi versions.

¹³ About the possibility that Ibn Ezra was familiar with the Ptolemaic *Hypotheses*, see K. A.F. FISCHER, P. KUNITZSCH, and Y.T. LANGERMANN, “The Hebrew Astronomical Codex MS. Sassoon 823”, *The Jewish Quarterly Review* 78 (1989), p. 256-257.

- An eighth sphere or sphere of the zodiac, with respect to which the positions of the planets are determined, and which moves westward.

The elements added by Ibn Ezra are: the ninth and tenth spheres, and the distinction of three levels in the universe. The ninth sphere, right (equator), is the first bodiless, invisible, and starless sphere. Ibn Ezra states in his commentary on Gen. 1:14 that “there are no bodies above the sphere of the zodiac”. An in Exod. 20:14, he explains:

“... The ninth sphere, which moves the rest of spheres with a movement from east to west every twenty-four hours... Many think that it is the creator sphere because it is bodiless”.

The westward motion of the eight corporeal spheres is caused by the ninth.¹⁴ The tenth sphere or the Throne of Glory (an old expression in Jewish mysticism) is the encompassing sphere that encloses the whole. Ibn Ezra does not say too much about this in his writings, only that it is the invisible place where human and angelic souls are created.¹⁵ This is the most divine being conceivable in the universe, but is not identified with God (commentary on Isa. 40:28 and Exod. 3:15).¹⁶ In Ibn Ezra’s cosmology, this sphere is the soul of the world, because any soul proceeds from it. Together with the ninth sphere it forms the upper world, and in contrast to the ninth, which has a clear astronomical function (to cause the diurnal of all the stars), the tenth sphere seems to have only cosmological-religious significance. The movements of the seven planetary spheres and the movement of the eighth sphere are contrary to each other, the planets

¹⁴ This is an Aristotelian trait in Ibn Ezra’s cosmology, since Aristotle, in his *Physica* and *Metaphysica*, affirmed the necessity in the universe of a mover that is not moved but moves eternally. The ninth sphere moves but is not moved. The way this sphere moves remains unexplained in Ibn Ezra’s writings.

¹⁵ See this expression in the *Babylonian Talmud*, *Shabbat* 152b, where Rabbi Eliezer Ben Hyrkanos says that the souls of the righteous are hidden directly below the Throne of Glory.

¹⁶ Isa. 40:28: “The meaning of *extremes* (*qetzva’ot*) is the line that circumvolves [everything] (*ha-qav ha-sobeb*). According to the opinion of philosophers, this line is bodiless. As God remains forever, the earth is the proof that He holds it inside the spheres upon nothing (*belimah*)” (M. FRIEDLÄNDER, *The Commentary of Ibn Ezra on Isaiah*, London, 1873, p. 67).

and the fixed stars share the westward movement caused by the ninth sphere, which constitutes a sign of the ruling presence of the world's Soul (tenth sphere) in every bodily sphere, for the ninth and the tenth share the *status* of bodiless, starless and right spheres. We can say that these are the qualities of the upper world and their beings.

For Ibn Ezra, the eighth sphere or sphere of the zodiac serves to establish the separation of the middle world from the upper. Here begins the bodily, starry, and inclined world,¹⁷ whose inclination is determined with respect to the equator (ninth sphere). The separation with the lower world is a question of matter: the fifth element for the heavenly bodies of the middle world, and the four elements for the sublunary beings.

All these spheres and their specific features and differences make possible for Ibn Ezra the distinction of three realities in the universe, each one consisting of one (lower world), eight (middle world), and two spheres (upper world). This tripartite division has Platonic roots and is not an original contribution by Ibn Ezra, although it holds an important role in his cosmology. The inclusion of two more spheres into his system is something that agrees perfectly with Ibn Ezra's other theories, notably with his numerology, which pervades his grammatical, astrological, exegetical, and scientific books. The play on the number ten is a good example. As previously mentioned, the number ten played an important role in the Pythagorean school, which considered numbers as real beings and characterized them with distinct qualities.¹⁸ For Ibn Ezra, who thought in terms of the decimal system and was acquainted with the decimal system and the method of position, and who was familiar with Pythagorean ideas about the symbolism and meanings of

¹⁷ The concepts of bodiless spheres and starless spheres are distinct, as well as the concepts of bodily spheres and starry spheres. However, in Ibn Ezra's cosmology, there are bodiless spheres and bodily spheres, and the former are always starless, while the second are always starry (except the elementary spheres of the sublunary realm).

¹⁸ For an overview of this kind of literature in Hebrew, and the dominant influence on it of Nichomachus of Gerasa (1st century), see T. LANGERMANN, "Studies in Medieval Hebrew Pythagoreanism Translations and Notes to Nicomachus Arithmological Texts", *Micrologus* 9 (2001), pp. 219-236. Ibn Ezra refers to his theory on numbers in his *Sefer ha-ehad* (ed. I. LEVIN, *Abraham Ibn Ezra Reader*, New York-Tel Aviv, 1985, pp. 399-403).

numbers, the number ten, like the number one, had a special significance and was invested with the highest qualities.¹⁹

To be perfect, the cosmological system should consist of ten spheres associated with the ten numbers (but in reverse, i.e., the number one and the tenth sphere), with each sphere paired with its number and the two participating with the same qualities. This question, which I have explored in another paper awaiting publication, will not be dealt with further in this work. However, Ibn Ezra extended this analogy to the ten commandments, resulting in a system that interrelates numbers, commandments, and spheres.²⁰ It is clear that Ibn Ezra's motives in including two more spheres in the Ptolemaic system were of cosmological nature, and were linked to a group of influences on his thinking that are not yet clear.

Let me turn now to the overall structure of Ibn Ezra's system. Tripartite divisions, as well as the macrocosm and microcosm analogy, were commonplace in the Middle Ages.²¹ Ibn Ezra divides

¹⁹ Ibn Ezra assimilates numbers and the physical form of letters in his *Sefer tzaḥot* (C. DEL VALLE RODRÍGUEZ, Salamanca, 1977): "There is a yud, which is sign of the one who speaks in first, it is like the initial aleph. Maybe they do it so because the number ten (yud) is like the number one (aleph), there is no difference between them; I already explained that the interchanged each other (p. 231 [XXVI. 67. 10-12]). ...Look, the form of the yud is like a sphere because it puts together everything inside it. It is from the root *The second choir proceeded to the left...* and *I appointed two great choirs, the first proceeding to the right* (Neh 12:38 and 12:31). ...Maybe [the word] hand is close to it, above all because after it goes the letter *kaph* (hand's palm)" (p. 233 [XXVI. 68. 8-10]).

²⁰ This correlation of spheres, numbers, and commandments is more than a "erudite play". In Ibn Ezra's thought, it has to do with the very real structure of the universe and the macrocosm-microcosm relations.

²¹ We find tripartite divisions in Plato, stoics, Plotinus, and Philo of Alexandria, among many others. The theory of the analogy between macrocosm and microcosm appears in the texts of Philo of Alexandria (1st century) and Isidore of Seville (7th century) in the Christian tradition; and, for the Judaism, in the *Midrash Bereshit Rabbah* (ca 5th century), the *Abbot of R. Natan* (ca. 8th century), the *Pirque' of Rabbi Eliezer* (ca 9th century), the *Sefer Yetzirah* (10th century), and the *Sefer 'Olam Qatan* of Ibn Tzaddiq (11th century). Allers explains that this theory dominated occidental thought until the 12th century, see Rudolph Allers, "Microcosmos: From Anaximander to Paracelsus", *Traditio* 2 (1944), pp. 319-407. The first time that the word microcosm appears is in a text by Aristotle (*Physics* VIII.2), in the context of a discussion on the eternity of movement. For George P. Conger (*Theories of Macrocosms and Microcosms in the History of Philosophy*, New York: Russell and Russell, 1967, p. 13), the basis of the theory is: "Portions of the world which vary in size exhibit similarities in structures and processes, indicating that one portion imitates another or others on a different scale".

all beings into three groups: the inferior world (the sublunary region), the world of the heavenly bodies (eight spheres), and the superior world (ninth and tenth spheres). Ibn Ezra clearly states that there is a clear separation between the lower and middle worlds on the one hand and the upper world on the other hand: the former are bodies, while the latter is non-corporeal (commentary on Gen. 1:14: “There are no bodies about the sphere of the zodiac”). He does not identify God with the upper realm (ninth and tenth spheres), but refers to the tenth sphere with the mystic expression Throne of Glory (*kise’ ha-kavod*). Ibn Ezra says little about this tenth sphere throughout his writings, but we learn that human and angelic souls are created there, and have to return there (as stated in the quoted text). The ninth sphere is the bodiless border between the corporeal and non-corporeal worlds, while the eighth sphere is the bodily border: “Look, the great circles are nine and the tenth is holy”.²² This fact makes the intersection of these two circles (corporeal and non corporeal, i.e., zodiac and equator) a very special feature in Ibn Ezra’s cosmology, and the quality of being bodiless and right makes the ninth sphere part of the upper world.

The ninth and tenth spheres, regarded together, form the outermost encompassing circle. Ibn Ezra refers to it as the right realm (*yashar*). The eighth sphere (fixed stars) moves along the celestial equator, while the spheres of planets and luminaries, move on paths inclined to the equator, and constitute the realm of the zodiac (*galgal ha-mazzalot*) or ecliptic (*qav ha-mazzalot*), because they share the

According to Conger (pp. 2-16 and 24) this theory is present in Greek thought, but in an implicit and fragmentary way until the arrival of the stoics, who turned it into a fundamental element of their philosophy, while neoplatonists articulated it and made it intelligible. Allers (1944: 322-323) states “the simplest form of microcosmism is apparently expressed in the idea that man contains within his being all the elements of which the world consists ... Or the universe may be compared to man. The macrocosm then becomes an enormously enlarged microcosm ... This view leads, with a certain necessity, to the assumption of a World-Soul as the intrinsic principle of existence and growth within the universe”. We can conclude that it is a powerful idea present in different ways in the medieval texts of the three religions. Rationalist Jewish writers like Bar Hiyya or A. Ibn Ezra (not to mention M. Ibn Ezra, Ibn Gabirol, Yoseph ibn Tzaddiq, etc.) explicitly refer to it in their writings. Ibn Ezra mentions it in his commentaries on Gen 1:26, Exod 25:40, and Exod 26:6.

²² *Sefer ha-Shem* 3.1 (ed. LEVIN, *Reader*, p. 422). In this quotation Ibn Ezra refers to circles, not spheres, so he is not dealing with the matter of bodiless/bodily spheres but with the geometrical (abstract) representation of any bodiless/bodily sphere.

inclination of the zodiac and their motions are computed in relation to it. These two circles and its common center (the Earth) form the basic framework of Ibn Ezra's three-level universe: "... the two great high circles ('*agulot ha-gedolot ha-'elyonot*'), one of which goes eastwards, and the other westwards".²³ We can now appreciate the cosmological motive that made Ibn Ezra introduce two more spheres in the universe. These spheres serve the purpose of separating bodiless/right and bodily/inclined realms in the universe, in addition to introducing a third level that corresponds to the three souls in man and complete the macrocosm and microcosm analogy. The tenth sphere has a cosmological/theological role only, while the ninth sphere has a double function in Ibn Ezra's cosmology. First, the astronomical function of being the cause of the diurnal motion of all the bodily spheres. Second, the cosmological function of being the very intermediary sphere between the superior and the middle world, for it is bodiless and right but has an astronomical role in the middle world. Let us go one step further.

ONE OF THE MEANINGS OF THE BIBLICAL TERM *SHAMAYIM* AND THE EQUINOXES

Ibn Ezra alludes again and again in his commentaries to a mystery (*sod*)²⁴ that is frequently associated with the biblical term *shamayim*, a key word in the exegetic and cosmological vocabulary of this writer.²⁵ *Shamayim* has several meanings in Ibn Ezra's texts, especially in his biblical commentaries, where he seems to purposely

²³ *Sefer ha-Shem* 6.6 (ed. Levin, *Reader*, p. 426).

²⁴ This term, appearing frequently in Ibn Ezra's biblical commentaries, usually involves knowledge that is not evident but accessible to reason, which signifies that man has to develop his rational faculty and his scientific knowledge in order to grasp some obscure and difficult ideas implicit in the Torah text.

²⁵ According to Sela (*Parshanut*, p. 272, 2001: 31 and 2003: 126-129), the meanings of this term are three: a) both points of intersection of both upper spheres, b) the two halves of heaven, one above and one below the Earth, and c) the poles. Sela ("Cosmological Exegesis", p. 31) relates *shamayim* to the double movement of heavens: diurnal movement of the ninth sphere in the equator, and movement of precession of the eighth sphere in the ecliptic. Y. Klatzkin (*Thesaurus philosophicus linguae hebraicae et veteris et recentioris*, New York, 1968, *pars quarta* p. 130) assigns to it the meaning of spheres. None of them go further in their explanations.

bewilder his readers when he is dealing with certain kind of questions. Only one of these varied although connected meanings is relevant in our research. It is alluded to in the introduction to his commentary on Gen. 1:1, where the meaning of *shemei ha-shamayim* is explained (literally, the heaven of the heaven).²⁶ In some other places he alludes, in a veiled way, to the dual reality that this term denotes.²⁷ In this way, we find *shamayim* in the commentaries on Eccles. 10:18 and on Song of Sol. 5:14 denoting both upper spheres: the eighth of the fixed stars and the ninth, bodiless and starless sphere above it.²⁸

The following sentence suggests that Ibn Ezra regards the uppermost world as the soul of the universe.

“The meaning of *he will take me* is that his soul will join the upper soul, which is the soul of heavens (*neshamat ha-shamayim*)”.²⁹

Despite the ambiguity of the term *shamayim*, the implicit mystery seems to be primarily the duality of heavens; on one side, the invisible reality of the ninth sphere, on the other side, the visible body of the eighth sphere that contains the whole ensemble of planetary spheres. My focus here is on the points of contact or

²⁶ Commentary on Gen. 1:1, ed. A. Weizer, *Perushei ha-Torah le-Rabbeinu Abraham ibn Ezra (Bereshit)*, Jerusalem, 1976, p. 13: “The heaven of the heaven exists. ... The people working with measures (i.e., the astronomers) will understand this mystery”. This term, as ambiguous as some others in the cosmological terminology of this writer, alludes sometimes to the sky (visible heaven and synonymous of *raqi'a*), and sometimes to the invisible heaven (ninth sphere).

²⁷ “It is known that any word referring to two things is a dual term... and so *shamayim*, and who understands the mystery of the sphere knows it” (commentary on Eccles 10:18, ed. M. Gómez Aranda, *El comentario de Abraham ibn 'Ezra' al Libro del Eclesiastés*, Madrid, 1994, p. 112*). “I already explained in the *Sefer ha-Shem* that *shamayim* is a dual and its root comes from *sham* (there), for the two places that are fixed in the pole (*saddan*)” (commentary on Psalms 115:16, Cohen 2003: 151). Contrary to *shamayim* in the fragment of *Ecclesiastes*, the quoted text of *Psalms* refers to the northern and southern poles, but in the two examples the meaning involved is a double being.

²⁸ Song of Sol. 5:14: “*His hands are spheres of gold*. The spheres are [the two] heavens (*shamayim*). Like [stones] of *Tarshish* [refers to] the stars. *His waist* is the zodiac (*afudat ha-galgal ha-'elyon*), which is the central line (*ha-qav ha-emitza'i*). *Sapirim* are the constellations (*ha-mazzalot*)” (H.J. MATHEWS, *Abraham Ibn Ezra's Commentary on the Canticles, after the First Recension*. Oxford-London, 1874, p. 20).

²⁹ Commentary on Psalms 49:15, Cohen, *Mikra'ot*, p. 155.

coincidence of these two realities, namely the equinoxes.³⁰ Considering the special status of the upper realm, these points should have a very special significance. Langermann³¹ pointed out the mystic significance of the poles of the sphere in Ibn Ezra's commentary on Exod 12:6:³²

“It seems to me that the poles (*saddanim*), the two quiescent points on the sphere, are taken as a representation of the divine, almost, I would say, a localization of the divine within the cosmos. ... According to my understanding, Ibn Ezra regards the poles to be literally the point of contact between the deity (or some manifestation of the deity) and the cosmos”.

Langermann, despite the explicit mention of *shamayim* and its specific association with the equinoxes in some of Ibn Ezra's texts, failed in the identification of *the poles* that have a cosmic significance.³³ As far as we know, the northern and southern poles of the sphere, although alluded to in Ibn Ezra's passage on Exod. 12:6, are not significant in Ibn Ezra's cosmology. By contrast, the equinoxes seem to be more important in Ibn Ezra's texts. They are the temporal points where the right and inclined worlds coincide, where the eternal and the created meet.

³⁰ Even if one of the spheres involved is bodiless, given that it is conceptualized as sphere, it is admissible to express the relationship between both as contact or coincidence. Concerning the adjective right (*yashar*) and sphere or circle (*galgal*) referred to bodiless spheres, we have to remember that is a principle of biblical exegesis, also accepted by Ibn Ezra, that the Torah speaks the language of man. In other words, man has to resign himself to use human language to speak about divine things, otherwise unspeakable.

³¹ See T. Y. LANGERMANN, “Some Astrological Themes in the Thought of Abraham ibn Ezra”, I. Twersky and J. M. Harris (eds.), *Rabbi Abraham ibn Ezra: Studies in the Writings of a Twelfth-century Jewish Polymath*, Cambridge (Mass.)-London, 1993, pp. 61-65. Sela (*Parshanut*, p. 271 n31) affirms that Langermann resorted to an iconography and a body of ideas which is characteristic of the Christian and Islamic world but which it is unlikely that Ibn Ezra knew.

³² “So *shamayim* are the poles of the sphere, which are like the hammered-down nails upon which the sphere rests, as in *to establish the heavens* (Isa 51:16)” (ed. WEIZER, *Shemot*, p. 76).

³³ Ibn Ezra uses the word *saddan* to mean the (northern and southern) poles, but also to mean equinox or the equinoctial colure/axis (*saddenei ha-galgal*), see his *Sefer ha-'ibbur* (S. Z. H. HALBERSTAM, Lyck, 1874, 2.19) and the third version of his *Sefer keli ha-neḥoshet* (MS Moscow, Gunzburg 937, fol. 4b).

The mystery involved in the term *shamayim* has also astrological facets. Astrology was an art or an experimental science (it was understood in this way by many of its medieval practitioners) that used to be included in the curriculum of physicians and astronomers. In order to understand the relationship of the equinoxes with astrology, we must consider two branches of the astrological practice: elections (*mivḥarim*) and historical astrology (*mishpatei ha-'olam*), which Ibn Ezra practiced and to which he devoted some of his treatises.³⁴ The former deals with the choice of the most appropriate moment to begin or to carry out a task or decision in order to obtain the best outcome from it. The latter is concerned with consulting stellar positions at the beginning of the years in order to know about the destiny of peoples, religions and countries. The procedure in the two branches was the same, to cast a horoscope and analyze the different elements in it (houses, positions of planets, astrological aspects, directions, and so on). The difference was that in elections the horoscope considered was that of a certain moment, while in historical astrology it was considered the solar revolution of the Sun, i.e., the horoscope of the moment in which the Sun enters the first degree of Aries or the vernal point.³⁵ In both cases, the relevant is the belief that the moment in which a thing begins determines the fate of that thing and the analysis of the corresponding horoscope can cast light about the future. Therefore the choice of the moment for a purpose (marriage, travel, purchase, and so on) or the analysis of the horoscope of the kingdom for the starting year could be very helpful.

³⁴ See *Sefer ha-'olam* (M. BEN YITZHAQ, *Sefer mishpatei ha-kokhavim*, Jerusalem, 1971, Ms Vatican 477 fol. 86b-95a, and Ms Cambridge, Classmark Add 1186, fol. 74b-83b), and *Sefer ha-mivḥarim* (Y.L. Fleischer, *Sefer ha-mivḥarim*, Jerusalem, 1939, and BNF Ms Heb. 1058 fol. 9a-14a).

³⁵ Especially considered were the solar revolutions of those years in which a conjunction of Jupiter and Saturn took place, see BAR HIYYA, *Sefer Megillat ha-Megalleh*, chap. V (A. POZNANSKI, Berlin, 1924, pp. 111-155). The astronomers Mashallah (8th-9th centuries), Al-Kindi (9th century), and Abu Mashar (9th century) seem to have introduced this practice into Arab and Hebrew astrology. In practice, for the revolution of the year, astrologers cast the horoscope of the new moon before the spring. Ibn Ezra, in his commentary on Amos 5:8 (Uriel Simon, *Abraham Ibn Ezra's Commentaries on the Minor Prophets*, v. I (*Hosea, Joel, and Amos*), Ramat Gan, 1989, pp. 209-215), explains that the points of the equinoxes moved backward through time for the motion of precession of the stars. Thus, in Amos times, the equinoxes were in the zodiacal signs of Taurus (spring equinox pointed by *Kimah*) and Scorpio (autumnal equinox pointed by *Kesil*).

As an astrologer, Ibn Ezra found it meaningful from the cosmological point of view that the beginning of the year was fixed in the Torah at the vernal point.³⁶ The fate of the year was sealed at the moment of the coincidence of the two upper spheres, the two main movements in heavens, the right and bodiless realm and the inclined and bodily realm, namely the moment of the coincidence of the divine level and the created level of the universe. Ibn Ezra clearly states in several of his commentaries that the creation referred to in the Torah only concerns the sublunary realm and that the stars, luminaries, and planets only appeared in heavens to serve as signs but already existed.³⁷

“Look, the meaning of *let there be luminaries* is that they were made visible [in the sky] so man can reckon time through them”.³⁸

“In addition, the word *bara'* does not mean to create something *ex-nihilo*, as many have thought. The proof is and '*Elohim formed man* (Gen. 1:27), which means that He delimited something (*gazar gezerah*). And the same Isa. 43:7. ... Those who investigate are divided. Some of them say that God (*ha-Shem*) constantly creates the Torah and the Throne of Glory, and they do not have a beginning in time and will not have an end. Others deny the Throne and the Torah and say that only God existed and created the world (*bara' 'et ha-'olam*) at the convenient moment according to His wisdom. These people are wrong, for moment (*'et*) is the motion of the sphere (*galgal*), and if there is no sphere, there is no time (*'et*). ... Now I am going to give you a rule. Know that Moses, our master, did not give the Torah only to the sages but to everybody, not only to

³⁶ See Ibn Ezra's commentary on Lev. 23:24, where he affirms that the year begins in Nisan (ed. A. LIPSHITZ, *The Commentary of Rabbi Abraham ibn Ezra on Hosea*, New York, 1988, pp. 76-77). See Abraham Ibn Ezra's commentary on Lev. 25:9, where he says that the year begins in Tishri (Lipshitz, *Hosea*, pp. 93-94). In his *Sefer mishpatei ha-mazzalot* (MS BNF 1057 fol. 68b), Ibn Ezra states: the beginning of the zodiacal signs is Aries for the Sun is in the axis of the intersection (*qav hit'habrut*) of the zodiac (*galgal ha-mazzalot*) with the equator (*galgal ha-mishor*).

³⁷ Concerning the creation narrated in Genesis, see I. LANCASTER, "Abraham Ibn Ezra's Definition of Creation", F. DÍAZ ESTEBAN, ed., *Abraham ibn Ezra y su tiempo*, Madrid, 1990, pp. 175-180; and S. SELA, "La creación del mundo supralunar según Abraham ibn Ezra: un estudio comparativo de dos de sus comentarios a Génesis 1,14", *Sefarad* 63.1 (2003), pp. 147-181.

³⁸ Second commentary on Gen. 1:14, (ed. WEIZER, p. 162).

the people of his generation, but to all the generations. He spoke about the creation but only about that referring to the inferior world (*ha-'olam ha-shafal*), which was made for man. For this reason there is no mention of the Intellects [of the heavenly bodies in the middle world] (*ha-melakhim ha-qedoshim*). ... And I will explain that the Intellects [of the spheres] (*melakhim*) are called *'elohim* and the stars are called the children of the *'elohim*. ... And it is completely true, according to those who investigate, that the moving Intellects of the spheres (*ha-mani'im ha-galgalim*) are glorious (*nikhbadim*) and remain changeless, and they will not diminish and will not perish.³⁹

In any event it is clear that the middle world is previous to the creation of Genesis, and the superior world precedes the two other levels (sublunary world and heavens) by time and by rank. The cosmology of Ibn Ezra is enigmatic at this uppermost level. As we have mentioned, the status of the upper world is clear but remains unexplained: it may be eternal, it may be the first thing emanated. The ninth sphere is the transition of the most sacred reality manifested in the universe with the world created (middle and lower worlds). It is also the first manifestation of the ruling presence of God in the entire universe with the first and only motion that all the heavenly bodies share. This motion comes from the right and bodiless (emanated?) realm.

In addition to the celestial nodes that are the equinoxes (contact of one bodiless with one bodily sphere), there are other points of contact between bodily spheres. Especially significant in astronomy and astrology were the points of contact between the middle sphere (the Sun) and the lower sphere (the Moon). Ibn Ezra employed the same terms to refer to the equinoxes and to the lunar nodes –*rosh* and *zanav ha-teli*–. These terms were commonly used for the lunar and planetary nodes and in this way Ibn Ezra used them in several of his writings.⁴⁰ However, as far as I know, only Ibn Ezra used them

³⁹ Second commentary on Gen. 1:1, (ed. WEIZER, p. 155-156).

⁴⁰ See Ibn Ezra's introduction to the Commentary on Genesis, his commentary on Exod 3:15, the *Sefer ha-'ibbur* (H. HALBERSTAM, Lyck, 1874: 2.22), the *Sefer ha-moladot* (Paris BNF 1056 fol. 51a), and the second version of the *Keli ha-nehoshet* (Ms BNF 1045 fol. 196b), among several other places. Ibn Ezra also uses for the lunar and planetary nodes the almost identical expression *rosh* and *zanav ha-tanin*. See, among others places, the second version of the *Sefer ha-mivharim* (BNF Ms. Heb. 1058, fol.

to refer to the equinoxes in his *Sefer ha-Shem*, and in the *Sefer ha-'eḥad*, although he also employs other, different expressions.⁴¹ Ibn Ezra's use of this pair of terms is based on the analogy of these three astronomical phenomena: circles (spheres) that intersect in two points that have astrological impact. First, the lunar (ascending and descending) nodes were elements used in the casting and interpretation of horoscopes by Indian and Arab astrologers, and Ibn Ezra refers to their meanings in his astrological writings. Second, with regard to the planetary nodes, the position of the planet on the ecliptic, as well as its position north or south of it was connoted with different astrological meanings. Finally, the equinoxes were the moment to cast the horoscope of the world (*tequmat ha-'olam* or *tequmat shanat ha-'olam*), when the fates of peoples, kingdoms, and religions were sealed and everything was renovated (*hiṭḥadesh*). It is not our intention to go further into these astrological explanations, this would divert us from our focus: the two-circle theory of Ibn Ezra and its role in the coincidence of the upper and the middle worlds, namely, the divine and the created worlds. At the equinoxes a special harmony is created between God and His creation, because at these temporal points there is no departure or divergence of the created realms with respect to the right and bodiless world. Interestingly, Ibn Ezra conceives the border between the created and the eternal within the realm of the celestial spheres. Goetschel describes Ibn Ezra's thought as intellectual mysticism.⁴² I believe that his concept of the equinoxes is a very good example.

10a), the second version of the *Keli ha-neḥoshet* (Ms BNF 1045 fol. 193a), and the second version of the *Sefer ha-te'amim* (NAFTALI BEN MENAHEM, Jerusalem, 1941, pp. 12 and 32). For the same meanings of these terms in other astronomers, see Bar Hiyya's introduction to the *Sefer ḥeshbon mahalekhot ha-kokhavim* (Millás Vallicrosa, Barcelona, 1959), and his *Sefer megillat ha-megalleh* (A. POZNANSKI and J. GUTTMANN, Jerusalem, 1968 [Berlin, 1924], 1.11).

⁴¹ See LEVIN, *Reader*, p. 420 [I.4] and 403, respectively. Namely, the common *rosh taleh* or *rosh mazzal taleh* for the vernal point and *rosh moznayim* for autumnal equinox (third version of the *Keli ha-neḥoshet*, MS Moscow, Gunzburg 937, fol. 4b, and commentaries on Ex 27:9 and 34:22); *rosh ha-hafukh* for any of the two equinoxes (the first version of the *Keli ha-neḥoshet*, Meir Ben Yitzhaq Baqal, Jerusalem, 1971, p. 110, this paper is a copy of the first edition of the book by H. EDELMAN, Königsberg, 1845); and *teḥelet ha-drom* for the autumnal equinox (*Sefer ha-me'orot*, Y.L. FLEISCHER, *Sinai* 5, 1933, p. 43).

⁴² R. GOETSCHEL, "The Sin of the Golden Calf in the Exegesis of Abraham ibn Ezra", *Abraham ibn Ezra y su tiempo*, Actas del Simposio Internacional, Madrid-Tudela-Toledo, February 1989. pp. 137-145. I. HEINEMANN uses the expression *mistiqa'im*

PROBABLE SOURCES FOR THIS THEORY

We have found Ibn Ezra's theory about the equinoxes highly intriguing and in this chapter we attempt to find out what could be his nearest sources. We have looked for similar ideas from among Greek writers first, and second from among Arab and Jewish authors. We have already pointed out at the beginning several astronomical sources about these two spheres and the equinoxes, but there is clearly nothing similar to Ibn Ezra's theory among them. Taking into consideration the most important texts of the Greek tradition received by Arab and Hebrew thinkers, we have found three texts where a hint of Ibn Ezra's theory can be discovered. Ibn Ezra could certainly have known of the first and the third of them, but it is uncertain if he could have known the second. In all events, our purpose is not to prove a direct influence of these texts in Ibn Ezra (surely an impossible task), but to explore similar ideas in the intellectual atmosphere that surrounded Ibn Ezra's life and writing, as the third text under consideration proves.

Plato's Timaeus

Platonism and Neo-Platonism were current traits in the thought of medieval Arab and Jewish writers. By the time of the period we are analyzing, it would have been difficult to isolate the main characteristics of the different schools of thought coming from Greece, India, Persia, and so on that had been merging into Muslim philosophy and science. Ibn Ezra mentions in his writings an amazing panoply of writers of several origins (Greece, Arabia, Persia, India) and schools (Plato, Hermes, Henoah, Aristotle, Ptolemy, Hipparchus, Al-Kindi, Mashallah, Abu Mashar, etc.). The only extant document about the reception of the *Timaeus* in Arabic (the language of the Jews in Sepharad) is the translation that Ḥunayn Ibn Isḥāq made of Galen's Greek epitome.⁴³ However it is known that the *Timaeus* was

mada'im for this kind of thinkers (*Ta'amei ha-mitzvot be-sifrut Israel*, Jerusalem, 1953, v. I, p. 71).

⁴³ See Nikolaus Hasse, "Plato Arabico-Latinus: Philosophy-Wisdom Literature-Occult Sciences", *The Platonic Tradition in the Middle Ages. A Doxographic Approach*. Berlin and New York, 2002, pp. 31-65, on p. 32 and n3. According to Hasse: "In the

translated into Arabic at least three times, according to references of Arab bibliographers. Thus we find that three translations of Plato's *Timaeus* were possibly available to Ibn Ezra: those by Yahya Ibn al-Bitriq, Hunayn Ibn Ishaq and Yahya Ibn 'Adi.⁴⁴ However, none of these translations is extant and therefore we cannot weigh their influence on Ibn Ezra. Only Galen's epitome translated into Arabic is extant, but nothing concerning the two-circle theory can be found in it.⁴⁵ It is possible that Ibn Ezra could have had access to some of these translations, despite the fact that he rarely mentions Plato in his books.⁴⁶ Could Ibn Ezra have been interested in this text?⁴⁷

Arabic speaking world, just as in the Latin West, the most successful Platonic dialogue was the *Timaeus*. The crucial figure in the transmission, however, was not Chalcidius but Galenus. Arabic bibliographers mention three translations of the *Timaeus*, of which no manuscript has as yet been found. What is extant is Galenus's paraphrase of the entire *Timaeus* that formed part of his *Platonikōn dialogōn synopsis*, lost in the Greek original. There also exist fragments of Galenus's second, medical summary of the *Timaeus* and traces of Proclus's and Plutarch's commentaries". For a general view of the transmission of the *Timaeus* and the *Republic*, see Abdurrahman BADAWI, *La Transmission de la philosophie grecque au monde arabe*, Paris, 1987 (2nd ed.), pp. 35-37 and 45, apud F. Sezgin, *Geschichte der Arabischen Schriftums*, see III *Medizin-Pharmazie-Zoologie-Tierheilkunde*, Leiden, 1970, pp. 48-49.

⁴⁴ Richard WALZER, "Aflaṭūn", *Encyclopedia of Islam*, Leiden, 1999.

⁴⁵ The Arabic version of this text circulated in the Arab world at least as early as the 9th century, when Hunayn Ibn Ishaq, one of the translators in the House of Wisdom in Bagdad, introduced it. The paragraph related to the two circles is the following, according to the Latin translation of Paul KRAUS and Richard WALZER, *Galenī Compendium Timaei Platonis*, London, 1951, pp. 44-46 [IVc-d]: "Deinde Timaeus, ea oratione confecta, exponit quo modo anima mundi in omnes eius partes dividatur secundum quasdam ut harmoniae proportiones; qua (voce) numerum indicat. Deinde, his (rebus) peractis, dixit: creator ea omnia in duas partes in longum divisit et earum unam in alteram coniecit, ita ut figura litterae Shīn –secundum Graecorum scribendi rationem quae huiusce modi est: X– evaderent quorum unus alteri coniungeretur. Manifestum autem est eum his verbis circulum sphaerae zodiacae et circulum aequidiale indicasse; circuli tamen aequidialis motum aliud ac totius sphaerae motum non esse. Cum autem hic motus circulum sphaerae zodiacae introrsum complectatur, creator circulum exteriorem indivisum reliquit, interiorem vero circulum sex locis divisit et ex eo septem sphaeras fecit, secundum quasdam ut harmoniae proportiones". It seems that, although Galen does not say anything in his text, he did not think that the circle of the Same was the upper sphere (*ibid.* 14-15 and 45 n22-23). The mention of the two circles of the *Timaeus* appear in such other Arab writers as Al-Biruni (10th-11th centuries) and Yabir Ibn Ḥayyan (8th-9th centuries) (*ibid.* 44 n17-20), although according to Walzer (*Encyclopedia*), the latter's quotations of Plato have nothing to do with the original Platonic dialogue (see P. Kraus, *Jābir ibn Ḥayyān: contribution à l'histoire des idées scientifiques dans l'Islam: Jābir et la science grecque*, Paris, 1986, pp. 48ff).

⁴⁶ We have found a mention in his treatise *Sefer ha-mivḥarim* (Y. L. FLEISHER, Jerusalem, 1939, p. 19), but the astrological theory referred to is pseudo-Platonic, as the

Philo of Alexandria's On Cherubim

Let us go on to consider another text where some similarities with Ibn Ezra's theory can be traced. Philo of Alexandria (1st century) proposed an interpretation of the two circles of the *Timaeus* that he relates with the cherubim of the Arc mentioned in the Torah. It is well known that Philo is an author whose work, written entirely in Greek, was scarcely known by the Hebrew tradition, and that Fathers of the Church were the ones who conserved most of Philo's texts, some of them thinking that he was a Christian. We have already mentioned that an influence of his writings on Ibn Ezra seems improbable, nevertheless we find in the two a similar interest for the

one appearing in his *Sefer ha-'olam* (Fleischer 1971: 48), where Ibn Ezra attributes to him a *Sefer ha-geshem* related to weather and rains. S. OCHS ("Die Wiederstellung der Kommentare Ibn Esras zu den Büchern Jeremias, Ezechiel, Sprüchen Salomos, Esra, Nehemia und Chronik. (Fortsetzung)", *Monatschrift für die Geschichte und Wissenschaft des Judentums* 60 (1916), pp. 193-212, on p. 211 and n1) refers to this quotation of Plato, and following Steinschneider, affirms that it must be read Al-Kindi instead of Plato. Plato is also mentioned in the *Liber de rationibus tabularum (Libro de los fundamentos de las tablas astronómicas)*, José M. Millás Vallicrosa, Madrid and Barcelona, 1947, p. 104), I am grateful to Dr. Shlomo Sela for pointing out to me this last reference.

⁴⁷ "This entire compound he divided lengthways into two parts which he joined to one another at the center like the letter X, and bent them into a circular form, connecting them with themselves and each other at the point opposite to their original meeting point; and, comprehending them in an uniform revolution upon the same axis, he made the one the outer and the other the inner circle. Now the motion of the outer circle he called the motion of the same, and the motion of the inner circle the motion of the other or diverse. The motion of the same he carried round by the side to the right, and the motion of the diverse diagonally to the left. And he gave dominion to the motion of the same and like, for that he left single and undivided; but the inner motion he divided in six places and made seven unequal circles..."

Now when the Creator had framed the soul according to his will, he formed within her the corporeal universe, and brought the two together and united them center to center. The soul, interfused everywhere from the center to the circumference of heaven of which also she is the external envelopment, herself turning in herself, began a divine beginning of never-ceasing and rational life enduring throughout all time. The body of heaven is visible, but the soul is invisible and partakes of reason and harmony, and, being made of intellectual and everlasting natures, is the best of things created", see Benjamin JOWETT, *Plato, Timaeus*, New York, 1949, pp. 18-19 [36-37]. For a detailed survey of the Platonic *Timaeus*, see Th. Henri MARTIN, *Études sur le Timée de Platon*, 2^e see, Paris, 1841, pp. 72-93 (v. I), pp. 39-47 and 80-85 (v. II). About the astronomical system in the *Timaeus*, see Andrew GREGORY, "Eudoxus, Callippus and the Astronomy of the *Timaeus*", *Ancient Approaches to Plato's Timaeus*, Robert W. Sharples and Anne Sheppard (eds.), University of London, 2003, pp. 5-28.

heavenly spheres in an exegetical context.⁴⁸ Philo finds three interpretations for the term cherubim, as Méasson has pointed out, the first two interpretations are cosmological and the third is theological and mystical.⁴⁹

- The cherubim are both heavenly spheres and the sword is their movement (*De cherubim* 21-25).⁵⁰
- The cherubim are both hemispheres and the sword is the symbol of the Sun (*De cherubim* 25-26).
- The cherubim are both highest divine powers (goodness and governorship) and the fiery sword is *Logos* (*De cherubim* 27-30).

The first interpretation (referring to Gen. 3:24 and 4:1–2) identifies the cherubim who guard the access to the Tree of Life in Paradise with the two circles of the *Timaeus*. Méasson has detected an inconsistency in Philo in relation to Plato's text concerning the direction of movement of each sphere because, according to Philo, the upper moves rightward and the inner moves leftward.⁵¹ If the exterior means the sphere of the fixed stars (movement from east to west, called diurnal and shared by every bodily sphere), then the right must be identified with the west. Méasson affirms that this orientation is atypical in Greek thought.⁵² In the *Timaeus* (36c), Plato identifies the westward movement with the rightward movement and, if the upper sphere is the diurnal movement, its movement can only be westward via southward.⁵³ Ibn Ezra's interpretation of the rightward direction as equivalent to southern direction agrees with

⁴⁸ Regarding the possible influence of Philo's allegoric method of biblical interpretation in Ibn Ezra, see I. HEINEMANN (*Ta'amei ha-mitzvot be-sifrut Israel*, 2 v., Jerusalem, 1953, v. I, p. 71). Heinemann states that Ibn Ezra could have had Philo's writings in his library remaining ignorant about his condition of Jew.

⁴⁹ Anita MÉASSON, *Du char ailé de Zeus à l'Arche d'Alliance. Images et mythes platoniciens chez Philon d'Alexandrie*. Paris, 1986, pp. 19-20.

⁵⁰ We follow the critical edition of Jean GOREZ, *De cherubim*, Éditions du cerf, Paris, 1963, pp. 28-33.

⁵¹ MÉASSON, *Du char*, pp. 22-23.

⁵² Only the Pythagoreans, according to Aristotle (*De caelo* II, 285b 25), considered the movement westward as rightward movement. Philo, as Méasson suggests (*Du char*, p. 23), could have taken this detail from them, depriving the Platonic text of any descriptive value and considering it merely symbolic.

⁵³ However it is true that, in the *Epinomis* (987b), whose Platonic attribution has been questioned, the author identifies this movement with the left.

the *Timaeus* text and with Rabbinic thought, which had already accomplished the identification of right, left, face and back with the directions of world.⁵⁴ In consequence, Philo may not be mistaken, as Méasson affirms, because the westward movement passes through the south (right).

The second of Philo's interpretations, as Méasson has pointed out, is missing in Plato's texts,⁵⁵ but we find that Ibn Ezra also assigns this meaning to the key Biblical word *shamayim*, although not in the context we are considering. The third Philonian exegesis, mystical and theological, relates the cherubim and the sword with the two upper potencies of God, which are also expressed by the duality of His names as *theos* (Creator) and *kyrios* (Lord). In this interpretation, the fiery sword is the symbol of reason, which unites both upper divine attributes.⁵⁶ This case has a certain similarity with Ibn Ezra's texts where he analyzes God's names, their meanings and qualities as nouns and adjectives, although this question is beyond the scope of this work.

Saadia's Book on Beliefs and Opinions

A sure source for the knowledge of the two-circle theory of Plato in Jewish circles is Saadia's *Book on Beliefs and Opinions*. The two-circle theory appears here in the context of the refutation of

⁵⁴ For a consideration of space from the point of view of the microcosm, see J. RODRÍGUEZ ARRIBAS, "Un horóscopo de Israel en el comentario a Números de Abraham ibn 'Ezra'", *MHNH, Revista internacional de investigación sobre magia y astrología antiguas* 3 (2003), pp. 203-216, on pp. 203-205. In his commentary on Exod. 33:21 (ed. WEIZER, p. 215), Ibn Ezra affirms: "Man's movement is forward, the upper body's movement is rightward, and the plant's movement is upward", see also Plato's *Timaeus* (Jowett 1949: 27 [45]).

⁵⁵ MÉASSON, *Du char*, pp. 35- 36.

⁵⁶ For a detailed survey of this work, see Fred STRICKERT, "Philo on the cherubim", *The studia philonica annual* 8 (1996), pp. 40-57, where he concludes that Philo was inspired in his exegesis of the cherubim by the minor prophet Habakkuk, leaving without question Philo's originality. Regarding the novelty of Philo's interpretation of the *Timaeus* and its relationship with the cherubs, see David T. RUNIA, *Philo of Alexandria and the Timaeus of Plato*. LEIDEN, 1986, p. 210. For the astrology in Philo's writings, see Émile Bréhier, *Les idées philosophiques et religieuses de Philon d'Alexandrie*, Librairie Alphonse Picard et fils, Paris, 1908, pp. 165-168.

several doctrines, among them, that mentioned in the text, which constitutes a *mélange* of atomism (polyhedra) and the two-circle:

“We picture to ourselves that He (the Creator) collected little points of these spiritual beings; namely indivisible atoms –which they conceive to be as fine as the finest particles of dust– and made of them a right line. Then He cut that line into two halves. Next He superimposed one upon the other crosswise so as to form the figure of the Greek letter X, which resembles that of the lam ’alif in Arabic without the base. Then He fastened them together at the point of their juncture. After that, He cut them at the place where they were fastened together and made out of one of the pieces the large uppermost sphere, whilst out of the other He made the little spheres...”⁵⁷.

Despite the evidence that this text mentions the two-circle theory, and the evident influence of Saadia in Ibn Ezra’s writings, for he refers to him in several parts of his biblical commentaries (not always in agreement), this text could not be the direct source of Ibn Ezra’s theory. Why not? Certainly it mentions the inclination between the two spheres, but what is missing is the fundamental reference to the opposite movements of the two spheres (westward and eastward). In addition, this text lacks any further religious or mystical consideration, and Saadia mentions it in order to prove it false. In consequence, we should disregard it. Anyway, it is valuable because it proves that the theories of the *Timaeus* were discussed among Arab and Jewish philosophers.

CONCLUSIONS

In this article two intriguing theories have been considered. On one hand, the inclination of most of the heavenly spheres with respect to the uppermost bodiless and right world and the way this fact affects Ibn Ezra’s cosmology. On the other hand, the cosmological meaning of the equinoxes, the temporal points when the right-bodiless world and the inclined-bodily world coincide.

⁵⁷ Samuel ROSENBLATT, New Haven, 1976, pp. 50-51.

Concerning the origin and sources of Ibn Ezra's theory about the two circles (equator and zodiac) and their intersection at the equinoxes, we have to make a distinction between the astronomical and the religious/mystical sides of this theory (a distinction that Ibn Ezra did not make). We have stated that the astronomical aspects of this theory were common knowledge among Ibn Ezra's contemporaries. There is nothing extraordinary in the fact that Ibn Ezra knew them and frequently referred to them in his writings, as others did. What seems original and new, at least as far as we know, is the cosmological significance that Ibn Ezra gave to these astronomical elements (the right and the inclined spheres and their intersection in the equinoxes) in the frame of a tripartite universe, and the persistent way this significance pervaded all his writings. Ibn Ezra introduced two more spheres in the astronomical system, which constitute the third and uppermost level of his tripartite universe consisting of ten spheres. In this uppermost level, right and bodiless, is placed the soul of the world and the motor of the unique motion in common of all the heavens (the diurnal motion). The coincidence/intersection of the uppermost bodiless heavens with the intermediary heavens of stars, planets and luminaries is evident at the moment of the equinoxes, when there is no departure from the rightness of the superior world. Ibn Ezra considered this fact highly meaningful in his astronomy, astrology, exegesis, and cosmology.

The rightness and the inclination that are the characteristics of the upper and middle worlds, respectively, very much affect the status of man in the center of the lowest of the spheres. Human perspective, the only one possible for man as a sublunary being, is embedded in the inclination of the intermediate world. This accounts for the relevant role that astrology plays in Ibn Ezra's thought. The positions of planets and luminaries in the inclined belt that is the zodiac indicate (*yarah 'al*) the destiny of any terrestrial being. All sublunary beings, human beings inclusive, are subject to the changes that the planets indicate. But man is more than a sublunary being; he is also a soul who has descended from the uppermost world and from the highest of the spheres (the Throne of Glory). This circumstance makes him unique among the sublunary beings: he is capable of a very different perspective. He can share the perspective of the Intellects, whose souls also proceed from the Throne. Thus, the human soul is capable of being right and sharing the rightness of

the uppermost world. In this process, astronomy and astrology are fundamental tools. The former shows how the two levels, right and inclined, are related in the motions of heavens; the latter considers how the sublunary beings receive the influence of the inclined motions of planets and luminaries.

ABSTRACT

This article explores one of the meanings of the biblical term *shamayin* in Abraham ibn Ezra's biblical commentaries and his scientific, theological, and grammatical treatises. This meaning points out the significance of two spheres in Ibn Ezra's cosmological system: the sphere of the equator (the ninth in the system of ten spheres) and the sphere of the zodiac (the eighth). The former seems to be bodiless and straight, according to Ibn Ezra's words while the latter is bodily and inclined with respect to it. The temporal points where the two circles coincide are the equinoxes, which have an important role in the Jewish calendar and in astrology, art to which Ibn Ezra paid great attention in his writings. In the final part of the article, the author looks for possible sources of this significance.