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Ezra's Biblical Commentaries: A New Approach

Josefina Rodríguez-Arribas

Abstract. Abraham ibn Ezra (Tudela, 1089/1092–1164/1167) was the most important writer of scientific treatises in Hebrew in the twelfth century; prior to him and his predecessor, Abraham bar Hiyya (d. after 1136), Arbeiie was the only language of scientific knowledge among Jews. After Ibn Ezra's work, Hebrew became a language of science, and eventually of research, among the Jews of the Iberia Peninsula and Europe. This fact makes Ibn Ezra's language, his choice of technical terms, and his linguistic agenda fascinating subjects that deserve more attention than received so far. My purpose in this article is to distinguish Ibn Ezra's strategies in coining technical terminology in the context of his biblical commentaries. The presence of astronomy and astrology in religious exegetical texts is not a feature exclusive to Ibn Ezra, but he is surely the most inclined (and effective) to find astronomical and astrological meanings in the biblical words.

Introduction

The large number of terms involved in astronomical or astrological explanations in Abraham ibn Ezra's biblical commentaries still demands a more careful and detailed analysis of texts and terms after Shlomo Sela's research, in addition to the presentation of the technical words in the form of an alphabetic glossary, which is comprehensive and easy to use for historians of science, Hebraists, researchers, and readers in general. This critical glossary is the purpose of my current research. My

1 I would like to express my appreciation to the Warburg Institute and the Sophia Trust for the Sophia Fellowship that made this article possible. This research has been also supported by a scholarship of the Spanish Ministerio de Asuntos Exteriores y Cooperación intended for the mobility of researchers.

2 For an overview of Ibn Ezra's writings and thought, see Shlomo Sela, Scientific Data in the Exegetical-Theological Work of Abraham Ibn Ezra.


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present study partly agrees with and confirms Sela's thesis about the significance of Ibn Ezra's choice of terms. Ibn Ezra selected biblical vocabulary in order to convey astronomical and astrological knowledge upon the basis that the Torah text contains in its words relics of the knowledge of all sciences that once were patrimony of Israel. However, it is also true that in resorting to the vocabulary in the biblical text, Ibn Ezra was following a procedure already established by Arabic writers, who sought in the Koran words for translating scientific and philosophical concepts from Greek. Moreover, resorting to the treasury of words that the previous literature in Hebrew displayed, especially the biblical words (biblical language was the highest expression of Hebrew and the main reference for the medieval grammarians of Hebrew), is the basic and first technique for the creation of neologisms that are not loans from a foreign language, especially if the writer is particularly concerned with the purity of his own language, as was Ibn Ezra's case.

We have found that the biblical context (which is clearly connoted) strongly determines the astrological or astronomical significance of some expressions, which in an exclusively scientific context would be named, in some cases, with different expressions. The particular way in which occasionally holds some original and authentic scientific terms that represent some of the most central concepts of nature and reality. Ibn Ezra considered these scientific words to be a relic of the original Hebrew language. For a comparison with other scientific writers (late contemporaries with Ibn Ezra, like Yehudah ibn Tibbon and Maimonides) also coined terms in a similar historical context, see Sela, Rife, pp. 140–42.

3 See Sela, Rife, pp. 104–6 and 140–43: 'His opening statement [in the introduction of the third version of his Sefer kehill ha-nehošet]) that Hebrew was the first and most comprehensive of all languages hints that it was created on the basis of a divine blueprint as a perfect language, with the broadest possible semantic compass. Hence it could express every nuance of reality and included the terminology needed to deal with science in general...his statement should be construed as a sincere ideological declaration of intentions: Ibn Ezra, an expert biblical commentator as well as a skilled scientist, considered himself to be highly qualified to revive the semi-extinguished holy tongue, to restore an original scientific meaning that had been forgotten, a task which involved mining the biblical text to rediscover a set of original Hebrew scientific terms' (pp. 104–5). Sela considers this task with eight terminological examples from the biblical text: gevulot (pp. 107–12), misiq (pp. 113–16), mišpaḥam (pp. 116–23), nabat hara (pp. 124–26), šenayim (pp. 126–29), mešartin (pp. 129–30), šivat (pp. 130–37), and hešev ha-øjeb (pp. 137–39), although he misses that some of these words were already used by previous texts and writers (for example, Ibn Gibrin used hešev ha-bina in his Ketuv mašrit). Sela concludes (p. 140): "...in all these cases Ibn Ezra was motivated by the same prevailing ideological incentive: he preferred biblical words over other common and more normative expressions, because in his opinion the available biblical vocabulary occupying the word..."
technical terminology emerges in the biblical excursus (within the biblical quotations or supported by them) is another factor that determines the predominance of biblical sources in Ibn Ezra's astronomical and astrological terminology. Moreover, according to the extant sources, we cannot miss the fact that, except for a majority of his poetry, Ibn Ezra's first writings in Hebrew, begun in the year 1140, were biblical commentaries, and that only later, starting in the year 1146, he began to compose the main group of his astronomical and astrological writings. Therefore, Ibn Ezra coins technical terminology for the first time in the context of his exegetical writings, not in specific astronomical or astrological monographs. Finally, most of the technical terms created in the context of the biblical excursus also emerge in the scientific writings, which makes very volatile the detection of an intentional distinction by Ibn Ezra between the terminology in the two groups of texts. This fact provides a likely basis for the theory of the predominance of biblical words in Ibn Ezra's technical vocabulary based on the fact that Ibn Ezra wrote the exegetical writings before the scientific writings, and therefore, had already coined some of the technical terms that he would employ later in his astronomical and astrological treatises. According to this view, technical terms had already emerged as an important part of his terminology in his biblical commentaries, and were confirmed as such in his scientific writings. Clearly, then, the right appraisal of Ibn Ezra's work requires the consideration of both groups of writings, and my current research is devoted to it. However, this paper treats some technical terms in Ibn Ezra's biblical commentaries and very few of the technical terms in his scientific writings (I discuss them only when their mention is helpful for explanation).

When one considers the whole of technical terms related with astronomy and astrology in the biblical commentaries of Ibn Ezra, one of the most striking features is the coexistence, in the same texts, of two groups of words: a highly specialized vocabulary with a clear and unique meaning (e.g., gogal qatan [epicycle], gogal ha-mazzalot [the zodiac], maseq [the center of a sphere/orb], etc.) and a different kind of vocabulary containing words coming from ordinary speech (per'ah [hemisphere], rohat [latitude], shor [west], etc.), which Ibn Ezra introduces as technical terms with a very specific sense, but at the same time keeps the everyday meanings of the words in other parts of his writings. In other words, the first group denotes only technical meanings, while in the second group the words denote technical meanings without losing the reference to their common meanings. Some of the technical words follow Arabic patterns (for example, the words for zodiac and deferent/eccentric), whereas the other words seem to be Ibn Ezra's original contribution to technical terminology (maseq for center and and seluah for multiplicity). Previous Hebrew writers had already put some of the technical words in circulation with the meaning with which Ibn Ezra denotes them. For instance, he employs a distinctive biblical term, hekev afqal (solar path or zodiac), which Ibn Gabirol used in his Sefer ma'ak with the same meaning. He also introduces the biblical group melo'et ha-samayim to denote the influence of stars in his commentary on Ps. 19:1 as Bar Hiyya previously used it in his Sefer megillat ha-megalleh, and uses teli (Baraita di-Semuel and Domnolo) in different nominal groups to denote the nodes, but also the equinoxes. Yet another denoting...
any of the seven planets is also a distinctive word in Ibn Ezra’s terminology, but was already referred to the planets (specifically to the angels of the planets) in the Chapters of Rabbi Eliezer.10 Another group of words emerges for the first time with a technical meaning, i.e., they are neologisms of meaning (for instance, pe’ah and netivyah). We find also neologisms of form like keli nebozet for astrolobe and, in his scientific writings, al-faradār (an Arabic loan) for the astrological division of any of the signs of the zodiac called in Latin fœdaria. Considering all these factors in these texts, it becomes clear that several Hebrew words and expressions in Ibn Ezra’s excursuses diverge from their ordinary meanings and contexts and enter a new level of speech, that of scientific language.

Ibn Ezra’s methodology to coin technical words in the biblical excursuses

First of all, Ibn Ezra’s approach to the coinage of terminology is that of a grammarian.11 As Van der Heide stated: ‘The study of the language in

Concerning these expressions in Ibn Ezra, see the third version of Ibn Ezra’s Sefer keli ha-neboshet, MS Moscow, Gunzburg, 937 f. 6b (hebrew afnzdhu), and M. Cohen (Hebrew text), Miqra’ei gedolot ha-keter (Ramat Gan: Bar Ilan University Press, 1992–). Psalms, Vol. I, p. 57 (Ps. 19:1, mete khet ha-samamim) [Hereafter Cohen, Psalms]. Regarding the meaning of râd and zenou ha-teqti for denoting, respectively, the spring and autumn equinoxes, see Ibn Ezra’s Sefer ha-velhad, I. Levin [Hebrew text], Abraham ibn Ezra’s Reader (Tel Aviv: Israel Matz, 1985), p. 401.

10 Pirque rabbi Eliezer, MS HUC 75 ff. 4b and 6b, digitized copy of the manuscript of the Hebrew Union College, Kuhn Library, Pirque Rabbi Eliezer, Electronic Text Editing Project, ed. Lewis M. Barth, <http://www. use.edu/projects/pre-project/graphic/index-04.html>. However it is also true that in this text motarot is also applied to the stars and in wider contexts, whereas Ibn Ezra uses it exclusively in relation to the planets.

11 See Mordechai Z. Cohen, Three Approaches to Biblical Metaphor From Abraham ibn Ezra and Maimonides to David Kimhi (Leiden: Brill, 2003), pp. 33–97. This writer explains that Hebrew lexicography began ‘as a tool for reading and translating the Bible’ (p. 94). According to Elaine R. Miller, ‘rather than studying Hebrew as a language first, and then reading from the Bible, the student learned to understand Hebrew by reading the Bible and translating it into the vernacular’, see Jewish Multiglossia: Hebrew, Arabic, and Castilian in Medieval Spain (Newark: Juan de la Cuesta, 2000), p. 47–48.

fact became part and parcel of the study of the Bible’.12 My focus in this paper will be the technical terminology (in the fields of astronomy and astrology) in the biblical commentaries. There are two main contexts of the emergence of technical terminology in the exegetical texts of Ibn Ezra. First, the biblical text and the words in it. Second, Ibn Ezra’s explanation of the biblical text, which is properly the excursus, where he introduces technical terms that are not in the biblical sentences that he is explaining, but are related to them in some way. I will analyze some examples of how Ibn Ezra builds his interpretation of certain biblical passages, those that he considered to be related to scientific contents (astronomical/astrological) or to be appropriated to relate to them. I intend to approach this along three lines. First, how the emergence of technical terms takes place either directly from the wording of the biblical sentences or indirectly from the words in the excursus that explain the biblical meaning. Second, how Ibn Ezra manipulates the biblical text to introduce technical meanings (the word ‘manipulates’ is not intending anything pejorative here). He usually produces more biblical references to, justify and round up the astrological/astronomical meanings that he has found. Third, what kind of technical words Ibn Ezra uses in these excursuses: neologisms of form or of meaning, Arabic transliterations in Hebrew, and technical terms already employed by previous writers. Let us take a look at several of these excursuses.

In the commentaries on Eccles. 3:2, 8:5, 8:6, and 9:11, Ibn Ezra introduces excursuses on the biblical term ‘et, which is present in the four

12 Quotation taken from Albert van der Heide, ‘Banner, Miracle, Trial? Medieval Hebrew Lexicography Between Facts and Faith’, ed. Nicholas de Lange, Hebrew Scholarship and the Medieval World (Cambridge: Cambridge University Press, 2001), p. 92. So is described the two-fold method of medieval grammarians upon the model of Arabic linguists, who firstly turned to the study of the Koran: ‘The first step was to determine the root of each word in the Bible by means of formal criteria. As soon as the correct morphological identification was established, a lexical explanation followed, preferably with the help of biblical equivalents. In this second phase, the limited size and the uniformly religious subject matter of the biblical corpus hampered the grammarian’s task, leaving him a limited choice of etymological equivalents’, see Irene E. Zwierp, Mother of Reason and Revelation, A Short History of Medieval Jewish Linguistic Thought (Amsterdam: Brill, 1997), [Hereafter Zwierp, Mother of Reason and Revelation] p. 6. As Zwierp remarks, this method was in turn influenced by the earliest Jewish exegesis of the Bible.
biblical verses. The technical meaning of this term in the four excurses has to do with astrology. It denotes a time selected for carrying out a purpose according to the rules of astrological election (Eccles. 8:6). It also denotes the moment of death in natal astrology, which is determined by the planet of the horoscope called in his astrological writings ‘prince’ (sir), which rules the aëtic places (megom hārȳim) or points in the horoscope related to life and death (Eccles. 3:2). Et is also part of a nominal group (construct state) that is one of the denominations of astrologers (yode) ha-ittim in Eccles. 8:5. In this excursus, Ibn Ezra introduces the technical expression (yode) ha-ittim quoting another biblical verse where the term ‘et’ appears (Esther 1:13). The relation between the two verses (Eccles. 8:5 and Esther 1:13) is that the passage of Esther explains the meaning of a sentence in Eccles. 8:5, namely, the heart of a wise man knows the moment (‘et) and the judgment (miṣrāṭ). The wise man is an astrologer, defined by his knowledge of the astrological judgment of any moment according to the positions of stars. The excursus on Eccles. 9:11, in addition to ‘et, explains the biblical word pega’ (chance, destiny), whose meaning Ibn Ezra interprets as depending on the meaning of ‘et (occasion), that is, ‘what is in the arrangement (matkonei) of the first stellar configuration (ha-ma’areket ha-elekh ha-risonah), in other words, the natal horoscope. In this way, pega’ denotes ‘the meeting (peqat) of any planet of the natal configuration (ha-ma’areket) with any of the seven planets, which can be in the aspect of opposition (heši), square (heši le-fanav ve-aharav), trine (šelīt), and sextile (heši le-fanav ve-aharav).’ By this brief expression, Ibn Ezra is making reference to the complex and long procedure of directions, an astrological technique that involves a natal horoscope and the different aspects (angles between planets measured in longitude) that the planets in the natal chart make with the planets in the course of time. Only these four excurses contain a complete typology of new technical terms: neologisms of form (heši le-fanav ve-aharav), neologisms of meaning (‘et, yode, ha-ittim, miṣrāṭ, pega, pega, matkonei, ma’areket), and Arabic patterns/loans (šelīt, which already existed in Bar Hīyya’s Hebrew in the form qeṣer šelīt). The appearance of ordinary speech of the expression heši le-fanav ve-aharav and the fact that it denotes two different technical meanings (the astrological relations between planets called square and sextile) are also characteristic of the development of early technical terminology in any language.

The biblical names Kesīl and Kinah, which in the Bible refer to names of stars or constellations, are the occasion for Ibn Ezra to expound on the astronomical phenomenon of the precession of the equinoxes, which causes the shift of the vernal point backward throughout the zodiac, and to introduce some astronomical expressions. Kesīl appears in Job 9:9 (together with Kinah), Isa. 13:10 (alone and in the plural), and Amos 5:8 (also together with Kinah). In the excursus on Job 9:9, Ibn Ezra explains that Kesīl and Kinah (two stars) are placed in the two opposite parts (peqat sem ol and peqat negev) of the solar path (ha-gadal ha-nahph), that is, in the southern (peqat negev) and northern (peqat sem ol) of the zodiac with respect to the equator. ‘Ayiš (the constellation Ursa or the Bear) and Hadreš teman (a group of stars that remains unidentified in the excursus but is placed close to Sāhil, which is probably Canopus, one of the most brilliant stars in the southern hemisphere) indicate the other two opposite points (the northern and southern poles of the sphere), explains Ibn Ezra. Implicit in this passage is also the rabbinic understanding of directions in space as referred to man, which Ibn Ezra employs consistently throughout his biblical texts.

13 Arabic taqdiṣ. Regarding qeṣer šelīt, see Bar Hīyya’s Megillah, p. 153.


17 Jrosa is also called ‘Agolah and Dov in Ibn Ezra’s commentary on Amos 5:8, cf. commentaries on Job 4:19, Gómez Aranda, Job, p. 16*, and Joel 4:11, Simon, Minor Prophets, pp. 169–70. Regarding Sāhil, see Ibn Ezra’s commentary on Amos 5:8.
giving proof of one of the most characteristic features of the new technical terminology in the Hebrew of the 12th century: the dependence on the context to understand certain terms. The archibiology of ha-galgal ha-čelion, which means either the sphere of the fixed stars or the sphere of the equator (the agent of the diurnal motion every 24 hours), and the determination of nequdat ha-nahberet, which means literally ‘the point of conjunction’, are good examples of this dependence on context. Regarding Kesil and Kimah in Amos 5:8, Ibn Ezra identifies Kesil with a group of stars (that is, the constellation of Scorpio), among them, the Heart of Scorpio (Antares) and Kimah with the Pleiades. Then they are opposite in the sphere and indicate the points of the two equinoxes, despite the fact that neither of them pointed to the equinoxes in Ibn Ezra’s time. These two words, Ibn Ezra explains, are the vestiges of Amos’ time and before, when these stars indicated the equinoxes. Another interesting technical datum in this excursus is Ibn Ezra’s distinction between constellation (surah) and zodiacal sign (mazzal)—a phenomenon related to the precession of the equinoxes, as I have already mentioned. Constellations and signs coincided once and will coincide again after many thousands of years (approximately, every 25,000 years). However, since the beginning, astrology and astronomy have worked in the fixed frame of the twelve zodiacal signs, considering the shift of the real constellations with respect to the conventional signs named after them. For this reason, the entrance of the spring was and is still considered the degree zero of Aries, although this point has shifted from Taurus (namely, the Pleiades or Aldebaran, in biblical times) to Aries and later to Pisces (where it was in Ibn Ezra’s times), and is still shifting.

Visually, Ibn Ezra’s terminology for the equinoxes makes reference to the fact that there are two spheres (the zodiac and the celestial equator, respectively), that is, the 8th and 9th spheres in his system, the former inclined and sary with respect to the latter, straight and starless) whose planes coincide twice a year at the moment of the equinoxes, which is visible in the phenomenon of the equality of hours of light and darkness two days a year, and reflected in the terminology (histavut/equality). The equinoxes of the excursus are related to the biblical verse by the

18 Gómez Aranda, Eclesiastés, pp. 25*-26* and pp. 78*-79*, respectively.

19 In Ibn Ezra’s commentary on Job 9:9 and on Job 38:31. Kesil is a big star of Scorpio (called the Heart of Scorpio, i.e., Antares), see Gómez Aranda, Job, pp. 25*-26* and pp. 78*-79*, respectively; see also Sela, Rite, pp. 257-73.

references to day/night and light/darkness in the biblical text. Again, in this small group of technical terms, we have found neologisms of form (ha-galgal ha-no'eh, neqadat habišṭavut, neqadat ha-ndheret), of meaning (pe' at neger, pe' at seti'el, Kesil, Kinah, galgal 'elion). Arabic loans/patterns (Saul, Lev 'Aqraw, Lev 'Ar'eh), and technical words already existing in Hebrew (Ayiš, Hadrei teman, Kesil, Kinah, saddān, galgal ha-μαζαλοτ, surah, mazzaθ, yiṣṭav, ha-qav ha-ševah, and natah).

The biblical term Helel (Lucifer) in Isa. 14:12 denotes, in Ibn Ezra's view, the planet Venus (kōvav Nogah) and its condition of matutinal star, as the biblical expression Ben Šāhar (the son of the twilight) in the same verse indicates. He also explains that, when it is visible, it is the most brilliant star in the sky, and relates the etymology of the term Helel to another expression in Isa. 13:10, lo yahelli oram ("they will not give their light"), which makes reference to the particular brightness of Venus. This is another case of resorting to a different biblical expression to explain a biblical word. Helel, Ben Šāhar, and kōvav Nogah were already existing in Hebrew when Ibn Ezra used them.

In his commentary on Gen. 33:10 (referring to Gen. 32:32), Ibn Ezra uses the biblical allusion to the rise of the sun and refers to the question of some commentators perplexed by the biblical statement the sun rises for him to introduce the basic astronomical knowledge that the sun rises (zorēbet) at different moments depending on the place of the Earth, namely, the local longitude and latitude (rohav). Excerpts clearly shows that Ibn Ezra also had in mind readers who were completely ignorant of the basic tenets of astronomy. Zorēbet and rohav were already technical terms in medieval Hebrew.

The term gevul is one of the many technical terms displayed in Ibn Ezra's extensive excursus on Exod. 33:21. Among several other subjects, he explains the name of God, the numerical values of its letters, and makes reference to the previous verses and their meanings. After disclosing the high spiritual level that Moses reached, Ibn Ezra introduces a long explanation. He begins with the statement that all the subliminary beings are connected to the forty-eight constellations of the heaven. There is a mention of all the possible mathematical combinations of the seven planets (which are 120, to be precise) and, after a brief mention to mundane/historical astrology (making reference to the fact that every clime has a zodiacal sign), he confirms it with the biblical quotation of Ps. 74:17, where the term gevul appears: attah hayvavot ki gevulot arey ("You have established all the limits [climes in Ibn Ezra's understanding] of the Earth"). The technical term is produced within a biblical verse referred to in order to explain another biblical verse. In this case, the two verses have to do with the special status of Moses and Israel (which is the part of God); for this reason this long excursus will finish with the rabbinic topos 'en mazzaθ le-Isra'el ("Israel does not have star"). With relation to mundane astrology, that is, the stellar decrees about human groups, peoples, religions, and kingdoms (mainly determined by the cyclical conjunctions of Jupiter and Saturn), Israel is above them as far as it keeps the Law of God; otherwise, it is in the same status vēh-ā-vev the stars as the other peoples and religions. Regarding gevul (clime), Ibn Ezra explains that there are seven in the northern hemisphere (the inhabited part of the Earth) and that they are the result of the inclination of the solar path with respect to the equator. As I have suggested above, gevul is a neologism of meaning introduced by Ibn Ezra, as Sela has proved, although it has an intriguing precedent in the Sefer yeyrith (ch. 5).

In Job 28:3, Ibn Ezra expounds on the biblical expression of Job even ofel (stone of darkness), which he interprets as meaning the Earth, for it

21 Arabic Suhāl, Qall al-‘Aqrab, and Qall al-‘Asad.
22 Friedländer, Isaiah, p. 28.
24 A. Weizer [Hebrew ed.], Piršei ha-Torah le-rabbeim Abraham ibn Ezra, Šenot (Jerusalem: Mossad ha-Rav Kook, 1977), [Hereafter Weizer, Šenot] pp. 215–18. Concerning some of the questions of this long excursus, see Sela, Astrologiaθ, pp. 8–84 (the 120 conjunctions), 100–2, and 211–13 (the term gevul); and Sela, Rise, pp. 288–323 (among other things, the knowledge of astronomy/astrology that Prolemy took from Jews).

25 Regarding this topos and the rabbinic discussion about it, see Talmud, Šabbat 156a. Concerning Ibn Ezra's commentary on Ps. 74:17 and the term gevul, see Sela, Rise, pp. 111–12.
26 See Ibn Ezra’s commentary on Exod. 23:25 (Weizer, Šenot, pp. 164–65). Concerning this position, see also the fifth chapter of Bar Hiyya's 'Iggeret (Schwartz, 'Iggeret R. Abraham bar Hiyya', pp. 27–28).
is the root of any darkness. This image remains without explanation; maybe we could read in it an allusion to the Gnostic and Neoplatonic theories about the sublunar realm as the source of evil. In any case, Ibn Ezra explains that the Earth is also even of the lunar eclipses (quadrat ha-levanah), when the moon is on the northern or the southern node (ro’s ha-teli or zenav ha-teli, respectively) and grows dark in the middle of the month by the shadow projected upon it by the Earth. Ibn Ezra produces three technical terms in this brief excursion: quadrat (eclipse), gaddar (to grow dark), and ro’s/zenav (northern or southern node). These terms are biblical although they are not taken from the biblical verse or from the biblical book that he is explaining. Among these terms, only one of them, teli, is non-biblical. This is in fact a very intriguing word that already emerged in Bar Hiyya’s writings, where it denoted the lunar and the planetary nodes, that is, the points where the orbits of the planets intersect the solar path. Ibn Ezra keeps this meaning and enlarges its employ with a new nominal group (galgal ha-teli), that is, the cycle of the nodes in his introduction to the commentary on the Torah. As far as know, the first appearance of teli us in the Baraita di-Semuel ha-qatan, where this term denotes the constellation of the northern hemisphere called Draco. However, the first time that the term teli denotes the lunar nodes occurs in Donnolo’s Sefer Halakot (946).

27 Gómez Aranda, Job, p. 51.

28 For example, in his Megillah, p. 11, and in his Sefer hesbon mahleket ha-kohekim, see J.M. Millás Vallierosa, [Hebrew ed. and Spanish tr.], La obra Sefer hesbon mahleket ha-kohekim (Libro del cálculo de los movimientos de los astros) de R. Abraham bar Hiyya ha-Bargeloni (Madrid: CSIC, 1959), p. 5 (lines 16–17). Bar Hiyya also employs the expression ro’s/zenav ha-telamin, see Megillah, p. 127. In Bar Hiyya’s text, tamiin refers only to the lunar nodes, whereas teli refers to the nodes of the moon and any of the five planets, as in Ibn Ezra’s texts. Ibn Ezra also employs tamiin for both the lunar and the planetary nodes, but only in his scientific and astrological writings, never in the biblical commentaries, despite that tamiin is a biblical word.

29 See Abraham ibn Shoshan, Ha-milhon ha-hadas, 8 vols., (Jerusalem: Kiryat Sefer, 1974), v. 7, p. 2861 (teli).

30 See S. Stern and P. Mancuso, “An Astronomical Table by Shabbatai Donnolo and the Jewish Calendar in Tenth-Century Italy”, AREF 7 (2007), pp. 34–35: “Donnolo defines it [teli] elsewhere as “like a king over the two luminaries, the five planets, and everything that takes place in the world, whether good or bad,”

Ibn Gabirol in his Keter mal'akht employs teli in the expression qav ha-teli, i.e., the axis of the nodes. Ibn Gabirol also coined astronomical/astrological terminology in Hebrew before Bar Hiyya and Ibn Ezra, but in a very particular context, poetry. We see that in this excursion Ibn Ezra combined already coined terms (teli, gaddar, ro’s ha-teli, and zenav ha-teli) with his neologism quadrat (instead of laqit, the word characteristic of Bar Hiyya for denoting lunar or solar eclipses).

Now, I will consider how Ibn Ezra integrated an anthropomorphic image already present in rabbinic literature into a scientific frame. In this view, the face, back, left, and right are the directions in space according to human perspective. These coordinates are enlarged to enclose the space beyond human reach, that is, the universe, where they are equivalent to east, west, north, and south, respectively. Ibn Ezra’s commentary on Exod. 10:13 explains the biblical word qadin in this way, and explains that it means eastern, which is the first among the directions of the world (pe’ot), for the sun rises in the east, and the west is called abor, that is, back in Job 22:8. In the commentary on Exod. 38:8, Ibn Ezra considers that the expression ‘shoulder’ (koref), in Exod. 38:14 and 38:15, requires an explanation, which is that the parts of the Tent
to which are attached “all the planets in the seven firmaments, both above and below, as well as the two luminaries and the twelve constellations” Donnolo merged in teli the mythical meaning of the celestial Dragon with the technical and more restricted meaning of teli as the ascending or northern lunar node, which is the specific meaning denoted by teli in the astronomical table edited, translated and commented in Stern’s and Mancuso’s article. The Dragon of the cosmological myth would have his head and tail on the two points where the lunar path intersects the solar path, i.e., the nodes. For some corrections regarding this article, see also S. Stern and P. Mancuso, “Shabbatai Donnolo and the Jewish Calendar: Corrigenda”, AREF 8 (2008), pp. 343–44.


32 See, for instance, Bar Hiyya, Megillah, p. 118.

33 For the rabbinic precedent (although not identical with Ibn Ezra’s employment of this analogy), see Talmud, Zevahim 62.2.

34 Cf. Ibn Ezra’s commentary on Exod. 27:9 (qadmah/the east), Weiser, Seferot, pp. 182–83; and on Job 23:8 (abor/the west), Gómez Aranda, Job, p. 46.
close to the east (the face) are called, as in man, shoulders. Upon the same basis, the part opposite the door, which is the west, is called ṣereḵ[u] (feet/legs) in Exod. 26:22 and 36:27. These excursuses are a clear example of how common words become technical terms by the procedure of inserting common terms in technical contexts and denoting with them a technical meaning that frequently is by some means related to the ordinary meaning (which the word usually does not lose, like in aḥor and peʿot). Kelet and yereḵavim are most likely metaphors than technical terms, and they work as if they were technical terms in this excursus, but nowhere else in Ibn Ezra's writings as far as I know.

In Exod. 6:7, Ibn Ezra mentions the great conjunction (ha-mahberet ha-gedolah) of Jupiter and Saturn (ha-məšaratim ha-ʿelionim), which was the basis of the astrological judgments concerning peoples, religions, and kingdoms. He states that, according to the influence of this conjunction and the sign in which the conjunction took place (Aquarius), Israel should have remained in the exile for more time, but God put an end to this exile. Commenting on Ps. 29:1, Ibn Ezra introduces the technical term in an excursus that is within another excursus. The first excursus explains that the biblical expression benet elim means the stars. The sub-excursus is introduced by the expression ha-taʾam followed by two explanations. The first explanation relates minis to maʿareket ha-kokavim, literally, 'the arrangement of stars' (an allusion to the branch of astrology called astrometeorology). The second explanation states that the stars cannot change their motions (temʾah) or arrangement (deʾeq maʿareket), for they act according to the rule that God established for them at the beginning. The same formula (ha-taʾam) is found in a similar pattern in his commentary on Ps. 94:15. Here Ibn Ezra introduces an explanation of deep impact on theological and philosophical thought: God only knows individuals (pratim/balagim) as far as they are part of universals (klalim), but does not know their particularities. Upon this basis, he says

that the divine judgments concerning universals are always fair, but can be harmful for some of the individuals. He gives the example of rain, which is good in general, for everybody needs water, but it can be harmful for some. In Ibn Ezra’s view, this rule is also applicable to astrological judgments: what stars indicate can be beneficial to large groups, but harmful to specific individuals. The main contribution of Ibn Ezra to technical terms in Hebrew in the excursus on Exod. 6:7 are the neologisms of form maʿareket ha-kokavim, ha-mahberet ha-gedolah, and ha-məšaratim ha-ʿelionim.

In his commentary on Ps. 104:19, the biblical mention of the sun going down is the occasion for Ibn Ezra to comment, among several other things, on the designation of the solar path northern and southern with respect to the equator (netōt ha-šenōt) as the cause of the change of the seasons. In contrast to other examples seen in this paper (e.g., his commentary on Amos 5:8), the astronomical information conveyed in this excursus—as in others already seen—is very basic. In Dan. 11:4, regarding the division of the powerful kingdom and the southern and northern kingdoms referred to in the book, Ibn Ezra explains that the latitude (rohav) of Jerusalem is 33 degrees; this is the distance of this city from the equator (qav ha-hašayyag, that is, the line of equality). One of the technical terms involved in this brief explanation is a biblical word (rohav) and the other (qav ha-hašayyag) partly, for qav is biblical and hašayyag is medieval; in any case, neither of the two biblical words are to be found in the biblical passage or in the biblical book explained. Netōt ha-šenōt and qav ha-hašayyag are neologisms of form that follow Arabic patterns (maʿal ʿad-samim) and hatt al-ʾistiwaʿa, whereas rohav is a technical

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38 Ibíd., v. 11, p. 83.
39 Ibid., p. 108.
40 For example, his extensive excursus on Exod. 3:15, where he expounds on the three worlds (upper, middle, and lower) and, more precisely, the part of this excursus related to the middle world, where he introduces an amazing number of astronomical terms (gaqal qaqam, gaqal gaqam, maqam, hafirat, gaqal ha-mazzalot, qav ha-mazzalot, etc.) and many astronomical descriptions concerning the motions of the planets. The terminology (unexplained) and the astronomical references are clearly addressed to a reader already familiar with them, but not necessarily an expert, see Weizer, Šemot, pp. 26-27 and 32-35.
term existing in Hebrew and already employed by Bar Hyya.\footnote{See, for instance, Bar Hyya’s Megillah, pp. 112 and 148.}

**General remarks**

These excursuses have in general the effect of producing different readings of the biblical text with respect to the traditional ones. In this way, after the excursus, one has to come back to the biblical words and re-read the verse or paragraph in the light of Ibn Ezra’s explanations. The biblical origin of the terms that Ibn Ezra chose to denote the concepts of two sciences (astronomy and astrology) indicates a double purpose in Ibn Ezra. First, as Sela has already pointed out, if Ibn Ezra finds in the Torah terms for these sciences, it is because he believes that the patriarchs and prophets knew them, and they were part of the civilization of Israel from its origin, as others before him also believed (such as Yehudah ha-Levi or Bar Hyya). If Ibn Ezra has to restore to these words the original scientific meanings that they once denoted, it is because Ibn Ezra’s contemporaries, and before them their ancestors, have forgotten them.\footnote{Sela, *Rise*, pp. 104–6 and 140–43.}

Consequently, this labor of re-alloting meaning and scientific contents to some words of the Torah does not seem to be considered by Ibn Ezra an arbitrary task. Ibn Ezra does not seem to believe that he is creating new vocabulary from ancient biblical words, rather he seems conscious that his task is precisely to recover and restore their original meanings and contents to the biblical words. This is something implied in his understanding of the words in the Torah, for that reason, the scientific excursus (astronomical/astrological, mathematical, and so on) emerges naturally in the exegesis of the text, it is not forced into it. In this way, Ibn Ezra is implicitly alluding to the fact that the holy language has lost something through time; the biblical words have lost meaning, which he recovers by means of the right exegesis. The exegesis of the biblical text is not only a restoration of meanings to the Torah but, precisely, a restoration of the Hebrew language (syntax, grammar, and vocabulary). How and why this process of decay has taken place is not clearly explained in Ibn Ezra’s texts, but we have to conclude that Israel possessed, in biblical times, a knowledge of sciences that faded away in the course of time and, later on, it would recover through its contact with Arabic culture.\footnote{Indeed, Ibn Ezra states in his long commentary on Genesis that the}  

authentic process of vivification if we consider that Ibn Ezra compares word with body and meaning with soul (Exod. 20: 1 and Deut. 5:5), and that this comparison is not just a simile.\footnote{46 Raymond P. Scheindlin, ‘Hebrew Poetry in Medieval Iberia’, ed. V. B. Mann, Th. F. Glick, and J. D. Dodds, *Convivencia: Jews, Muslims, and Christians in Medieval Spain* (New York: George Braziller, 1992), p. 44.} Moreover, Ibn Ezra, in his vindication of Hebrew as a language of science, is keeping a trail of his time, a period of renaissance for the Hebrew language, when Jews ‘made Bible! Hebrew the Jewish equivalent of classical Arabic and accorded their language a new status as a cultural monument above and beyond its traditional status as the holy tongue’.\footnote{45 Weizer, *Senor*, p. 127 (Exod. 20:1), and A. Weizer (Hebrew ed.), *Pirke ha-Torah le-rabbenu Abraham ibn Ezra, Vayiqra*, Be-midbar, Devorim (Jerusalem: Mosaad ha-Rav Kook, 1976), p. 230 (Deut. 5:5). In relation to the concept of language in Ibn Ezra’s thought and in other Hebrew writers of the period, see A. Sánchez-Badillos, ‘Philologists and Poets in Search of the Hebrew Language’, ed. Ross Brann, *Languages of Power in Islamic Spain* (Ithaca: Cornell University Press, 1997), pp. 49–75, and ‘The Origin of the Language’, pp. 233–303. In the latter, Sánchez-Badillos states that, according to Ibn Ezra’s view in his defense of Saadya, “God did not give a complete language to men, even not the language of the Torah or the Prophecy: what He gave to the chosen ones was the faculty of expressing the divine message in their own words” (pp. 296–97). Ibn Ezra also holds that Hebrew, the holy tongue, was the primeval common language and Adam established its rules (pp. 298–99).} Bar Hyya and Ibn Ezra are the first Jewish writers making this renaissance of Hebrew possible in the field of science.

In addition to the previous remarks and focusing on the terminology, I should address several questions. First of all, the ambiguous polysemy of many of the terms (those related with astronomy and astrology, the sciences considered in this paper) could be due to two reasons. First, an objective reason: the novelty of the domain (scientific astronomy and multiplicity of languages appeared as a consequence of the people scattering from and forgetting their first language, Hebrew, see A. Sánchez-Badillos, ‘The Origin of the Language and Linguistic Pluralism according to Medieval Jewish Exegetes’, *Verbum et Colamns Semitic and Relates Studies in Honour of Professor Taouafi Harbawineh* (Helsinki: Finnish Oriental Society, 2004, [Hereafter Sánchez-Badillos, ‘The Origin of the Language’], p. 301. Concerning the exile as the main reason for the decay of Hebrew language, see Zwirp *Mother of Reason and Revelation*, pp. 229–40.}
astrology) in the Hebrew language, which lacks some of the words that these sciences require. Second, a subjective reason: Ibn Ezra’s perception of this process. Ibn Ezra does not seem to consider this linguistic feature a diminution of the power of the Hebrew language to communicate. In any case, he does not see any reason to justify, to explain, or to avoid the ambiguity, which in his terminology is to some extent lesser than in Bar Hiyya’s, yet still present. The different meanings of words are linked to and dependent on their contexts, which is a position very consistent with the approach of a trained textual interpreter, a task that Ibn Ezra carried out throughout his life. The degree of rightness in the identification of meanings also relies on the knowledge of the reader/interpreter, which is also a position in agreement with Ibn Ezra’s love for concealment and esotericism.  

In other words, this ambiguity could have been something that Ibn Ezra sought and considered convenient, especially in exegetical contexts, although we cannot forget that this is also a distinctive trait of early technical terminology in any language.

There are three features that overlap in Ibn Ezra’s position with respect to Hebrew language and make difficult to ascertain his real strategy in the coinage of neologisms without the consideration of the terminology in his scientific writings: first, the high esteem of the Hebrew language, especially biblical Hebrew; second, the certitude of a Jewish science in the past; and, third, the biblical background of the term that he is explaining. I would tip the balance for the view that Ibn Ezra’s prevalent preference of biblical terms in his biblical exegeses is due more to the religious context in which he is introducing technical terminology, which takes into consideration not only the biblical words but also their readers, than to Sela’s thesis about the Greek thief of Jewish science. Ibn Ezra took over a double legacy: Arabic and Hebrew, and upon this he created both new meanings for old words, as well as new words for meanings already existing in his favorite domains of knowledge, astronomy and astrology. In this paper I have considered technical terms that are biblical words or emerge in biblical contexts. This presence was not an obstacle to coin new terminology in his scientific texts, which were written later, terminology that in these purely scientific contexts does not always give prevalence to biblical roots and takes into consideration the Arabic models that he is translating: belt ha-

sof (Arabic burj al-muntahā or burj al-intahā) for terminal house; ‘almarada’r (Persian loan in Arabic al-fardār) for firdārā; yadeh (Arabic ‘ayn) for the cardinal houses in a horoscope; ‘ha-yone’r gewit (ha-tahala’im) (Arabic huwarān or crisis) for any critical day in illnesses according to astrological rules; ‘ad al-‘ad (Arabic suhādat) for testimony; ha-taqiq (Arabic sāḥit) for the planet ruling a horoscope, etc.  

Considering these words, one last but decisive question emerges: to what extent could Ibn Ezra efface Arabic patterns in the coinage of technical terminology in Hebrew when most of these terms in Hebrew (biblical words excluded because of the particular way they were coined) are descriptive terms and expressions as their equivalents in Arabic? E.g., galgal ha-mazzalot for the zodiac (Arabic fakal al-burj), galgal qamum in contrast to galgal gadol (deferent) for epicycle (Arabic fakal tadhīr), makheret/dibbat for conjunction (Arabic ḫinā/muqāрам), miṣpat for astrological judgement (Arabic akbār), gešer for almincantarat (Arabic maqantarā), ha-galgal ha-yose’ (ha-maṣrāq) for eccentric (Arabic al-fakal al-hārij al-makuz), etc.  

In addition, a consistent analysis of how many technical words Ibn Ezra truly coined is still required, for we have seen that an important part of his most characteristic terms were introduced and used by previous writers or texts. These questions affect mainly the coinage of terms in scientific contexts and will be answered in the monograph that I am preparing on the subject.


48 See Sefer ha-maṣlādat, MS BNF 1056 f. 61a and f. 52a; the second version of the Sefer ha-keli ha-neḥošet, MS BNF 1045 f. 194b; the Sefer ha-neʿem, Y.L. Fleischer [Hebrew text], Sina 5 (1933), p. 43; the second version of the Sefer ha-ṣe elot, MS BNF 1058 f. 2a, and the first version of the Sefer ha-ṣe elot, MS BNF 1056 f. 66b, respectively.

49 See the second version of the Sefer ha-keli ha-neḥošet, MS BNF 1045 f. 189a; the second version of the Sefer ha-nivḥarat, MS BNF 1058 f. 11a; the second version of the Sefer ha-ṣe elot, MS Vatican 477 f. 86b; the second version of the Sefer ha-keli ha-neḥošet, MS BNF 1045 f. 195a; the third version of the Sefer ha-keli ha-neḥošet, MS Moscow, Ginzburg 937 f. 4b; and the introduction to the commentary on the Torah, Weitzer, Bereśit, pp. 3–4, respectively.