

Biographical Encyclopedia of Astronomers

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Ibn Ezra: Abraham ibn Ezra

Born Tudela, (Navarre, Spain), circa 1089

Died Rome, (Italy), or possibly Palestine, circa 1167

Abraham ibn Ezra was a poet, grammarian, biblical exegete, philosopher, astronomer, astrologer, and physician. He lived in Spain until 1140 and then left Spain for a period of extensive travel, visiting Lucca, Mantua, Verona, Provence, London, Narbonne, and finally Rome. It was during this latter period that most of his works were composed. His wanderings forced him to write in Hebrew as well as in Latin, a fact that perhaps saved his works from oblivion. Like his teacher Abū al-Barakāt, his son Isaac converted to Islam.

Ibn Ezra is best known for his biblical commentaries, which are written in elegant Hebrew, replete with punctuation and word plans. These commentaries were commenced in Rome when he was already 64. Ibn Ezra was the first Jewish author to interpret a significant number of biblical events in an astrological way and to explain certain commandments as defenses against the pernicious influence of the stars

Because of his constant alluding to "secrets" in these commentaries based on astrological doctrines, Ibn Ezra's works inspired numerous supercommentaries. Ibn Ezra himself claimed that only those schooled in astrology, astronomy, or mathematics would understand these commentaries properly. Perhaps the most famous commentator on Ibn Ezra was Spinoza, who added "Aben Ezra, a man of enlightened intelligence and no small learning," in support of his own contention that Moses could not have written the Pentateuch. Although Ibn Ezra did not write any specifically philosophical works, he was strongly influenced by the Jewish Neoplatonist philosopher Solomon ibn Gabirol, and his works contain much Neoplatonic material

Although Ibn Ezra was one of the foremost transmitters of Arabic scientific knowledge to the West, most of his scientific works are extant in manuscript only. Interestingly, most of his works appear in two or more versions; most scholars agree that, insofar as Ibn Ezra was an itinerant scholar wandering from city to city, he would write new versions for each group of patrons he encountered.

The first group of treatises is devoted to teaching skills related primarily to astronomy and mathematics, as well as the use of scientific tools and instruments. The major works in this group are *Sefer ha-mispar* (The Book of Numbers), designed to be a basic textbook in mathematics; *Sefer ta amei ha-luhot* (The Book of the Reasons Behind the Astronomical Tables), a treatise written in four different versions (two in Hebrew and two in Latin) to provide astronomical and astrological knowledge to persons interested in using astronomical tables; *Keli ha-nehoshet* (The instrument of brass, i.e., the astrolabe), a technical manual, written in three different Hebrew versions as well as a Latin version, designed to teach the astronomical and astrological uses of the astrolabe; *Sefer ha-ibbur* (The book of intercalation), written in

two versions, designed to establish the Jewish calendar and explain its fundamentals; and, finally, *Sefer ha-ehad* (The book on the unit), a short mathematical treatise devoted to the attributes of the numbers.

The second group of treatises comprises exclusively astrological works and includes both astrological textbooks and a series of astrological works dealing with the various branches of astrology. In addition to these treatises, Ibn Ezra translated into Hebrew a no longer extant Arabic scientific treatise, Ibn al-Muthanna's Commentary on the *Astronomical Tables of al-Khwarizmi*. This work includes Ibn Ezra's introductory assessment of the transmission of Hindu and Greek astronomy to the Arabic sciences

Because Ibn Ezra was one of the first Hebrew scholars to write on scientific subjects in Hebrew, he had to invent many Hebrew terms to represent the technical terminology of Arabic. For example, he introduced terms for the center of a circle, for the sine, and for the diagonal of a rectangle. He describes his own research as *hakmei ha-mazzalot* (science of the zodiacal signs), a term he often uses to refer to a number of branches of science: astrology, mathematics, astronomy, and the regulation of the calendar. In as much as the

purpose of these works was primarily to educate and introduce scientific findings to a lay audience, they serve as an excellent source of learning about scientific texts available in 12th-century Spain

As noted by Shlomo Sela, one of Ibn Ezra's main aims was to "convey the basic features of Ptolemaic science, astronomical as well as astrological, as it was transformed by the Arabic sciences, especially in al-Andalus" (Sela, 2000, p. 168). Thus, for example, his best-known work, *Beginning of Wisdom*, functions as an introductory astrological textbook and deals with the zodiacal constellations and planets, their astrological characteristics, and more technical aspects of astrology. Ibn Ezra's star list appears as a section of his work *The Astrolabe*. The list is given in the form of a paragraph, in which the coordinates are given in Hebrew alphabetic numerals, and the Arabic names are transliterated into Hebrew characters. As Bernard Goldstein has pointed out, many of the discrepancies between Ibn Ezra's star positions and those in the Greek text of the *Almagest* can be traced to the Arabic versions of the *Almagest*. In his translation of Ibn al-Muthanna's *Commentary*, Ibn Ezra describes the early stages of astronomy among the Arabs, listing a number of prominent astronomers whose works he consulted. The Hebrew versions of Ibn al-Muthanna's commentary have been useful for interpreting a set of canons for tables with Toledo as the meridian preserved in a Latin manuscript.

According to John North, Abraham ibn Ezra was the earliest scholar to record one of the seven methods for setting up the astrological houses. This method was used, for example, by Gersonides, who made use of Ibn Ezra's *Book of the World* in his prognostication of 1345

Insofar as Abraham Ibn Ezra's works were widely copied in Hebrew and translated into European languages, he was responsible for the availability of much Arabic science in Hebrew and Latin, and he helped to spread the new Hebrew astronomical literature throughout Europe.

Tamar M. Rudavsky

Alternate name

Ezra

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—— (2001). "Abraham ibn Ezra's Scientific Corpus—Basic Constituents and General Characterization." *Arabic Sciences and Philosophy* 11:91–149. (Sela has managed to ascertain the existence of 26 different treatises, representing 14 distinct treatises in all, written mostly in Hebrew and partly in Latin.)