PŪRVĀPARAPRAJÑĀBHINANDANAM
EAST AND WEST, PAST AND PRESENT

Indological and Other Essays in Honour of Klaus Karttunen

Edited by

Bertil Tikkanen & Albion M. Butters

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FI-00014 University of Helsinki
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ABRAHAM IBN EZRA ON "THE SCHOLARS OF INDIA" – A TWELFTH CENTURY JEWISH VIEW OF INDIAN ASTROLOGY

Nadja Johansson

ABSTRACT

Indian astrology was among the first forms of science to enter the Arab world in the 8th century. Four hundred years later, when the transmission process had turned toward the Latin world, the Spanish-born Jew, Abraham Ibn Ezra, participated vigorously in transmitting Arabic science to the West, including Indian astrology. This paper explores Ibn Ezra's knowledge of and attitude toward the Indian astrological tradition, first providing an astrological doctrine about the Indian scientists themselves and then revisiting the introduction of Indian science into Islamic Spain. Ibn Ezra commented extensively on the tradition of astronomical tables that originated in India. He was well aware of several astrological rules of Indian origin, which in his works came to be closely connected with issues like theory and observation, weather-prediction and numerals.

1. INTRODUCTION: ABRAHAM IBN EZRA AND INDIAN SCIENCE

In the process of transmission of intellectual ideas to Abbasid Iraq in the 8th century, Indian astrology was of central interest. It was well represented again when these ideas, refined and developed, began to pour out of the Arab world into the Latin one of the 12th century. It was at this juncture that the Spanish-Jewish scholar Abraham Ibn Ezra played a major role in the translation and transmission of scientific ideas. One might wonder what understanding that this man, educated in al-Andalus at the western end of the Arab world, had of India at the eastern end. More specifically, how did he interpret the role of Indian astrologers in the process of transmission, especially considering that he himself stood at another crucial juncture in that process? What astrological doctrines did Ibn Ezra attribute to Indian astrologers, and how did he evaluate them?

Abraham Ibn Ezra was in the habit of referring explicitly to a great variety of sources (e.g. Jewish, Arabic, Persian, Indian and Greek). His works are considered

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to be particularly revealing about the scientific sources available in 12th-century al-Andalus. His texts make frequent reference to the *ḥakhmei Hodu*, or "scholars of India". Ibn Ezra was exceptionally prolific, and a remarkable number of his texts have survived.

While the Indian astrological system was deeply influenced by Greek astrology, its initial contact had been with pre-Ptolemaic Greek astrology. For this reason, it exhibits many differences with Ptolemaic astrology. For example, the Indian tradition did not differentiate between astrology and astronomy (Tester 150: 155), a distinction that was fundamental to Ptolemaic astrology (Ptolemy 1940: 3–5). Whereas one can certainly speak of a specifically Indian astrological tradition, there was no "Jewish astrology" in any meaningful way. Medieval Jews, like Abraham Ibn Ezra, who lived within the Arab world and contributed to astrology and astronomy, did so within the context of Arab science.

2. INDIA AS THE EXCEPTION TO THE ASTROLOGICAL RULE

Ibn Ezra and his contemporaries generally had a high opinion of Indian scientists. Ṣāʿid al-Andalusī, Ibn Ezra's near-contemporary and fellow Spaniard, noted in his history of science[1] that India was "the first nation to have cultivated the sciences" and was renowned "for the wisdom of its people". Al-Andalusī also specified that Indians were especially well versed in astronomy, astrology and mathematics (al-Andalusī 1991: 11–12), subjects that were of particular interest to Spanish scholars as well. Indeed, al-Andalusī himself was a proponent and defender of the Sindhind tradition, which had its roots in India (Pingree 1998: 336).

Ptolemy had established that the land of India and its inhabitants were under the constant influence of the zodiacal sign of Capricorn (Ptolemy 1940: 159). Ptolemy's doctrine further dictated that India's southern location, relative to the *ecumene*,[2] would result in its inhabitants being black-skinned, as was the case with those of Africa. But while this doctrine also famously stated that people in such hot places had a sluggish and savage temperament (Ptolemy 1940: 122–127), medieval scholars exempted Indians from this rule. According to al-Andalusī, "Indians, as known to all nations for many centuries, are the essence of wisdom, the source of fairness and objectivity. [...] In spite of the fact that their color is in the first stage of blackness, which puts them in the same category as the blacks,

1 *Ṭabaqāt al-ʾUmam* (the Categories of the Nations). The translation is published under the name *Science in the Medieval World* (1991). Tr. and ed. Semaʿan I. Salem & Alok Kumar.

2 This refers to the *zone* in which India was located within Ptolemy's geographical scheme.

Allah, in his glory, did not give them the low characters, the poor manners, or the inferior principles associated with this group and ranked them above a large number of white and brown peoples."

An astrological explanation for this exception had been formulated. Al-Andalusī reported that Indians are ruled by two planets, Saturn and Mercury. Saturn, the planet of all things dark and insidious, makes their skin black. Mercury, the planet of wisdom, makes them intelligent. The combined influence of the two planets also manifests in the depth (Saturn) of their wisdom (Mercury), according to al-Andalusī (1991: 11–12). Ibn Ezra provides further details on the astrological rulership of India, citing Abū Ma'shar's view that India is ruled by Mercury in Capricorn.[3] In the first version of the *Book of the World*, Ibn Ezra (2010: 89) explains, "Mercury with the sign of Capricorn [governs] the inhabitants of India, who are called al-Hind. Therefore Abū Ma'shar said that Mercury governs their souls, so they are clever and smart, and Capricorn [governs] their bodies, so they are not white." Ibn Ezra was not unaware of the Ptolemaic rules about the influence of the zones on the intellectual powers of their inhabitants, something to which Indians formed an exception. In the *Book of Nativities*, he advises the would-be astrologer that if an individual has Mercury as ruler of his nativity but he is born in Ethiopia (Kush), "...we will not maintain [unconditionally] that the newborn will be wise in any sorts of sciences; since it is impossible that a wise person will be born in Ethiopia because of the increased heat of the sun there. Therefore, even though the temperament of this Ethiopian will not be as balanced as should be, we will judge that he will be cleverer and wiser than his fellow-countrymen."[4]

It seems, therefore, that the inhabitants of India were the only exception to the Ptolemaic rule and that their intellectual achievements were all the more impressive for it. Despite their unfavorable location and the dark color of their skin, the contributions of the Indian scholars to the sciences were imposing: they were correctly credited with the invention of the numerals and the zero, trigonometry, and the mysterious game of chess (al-Andalusī 1991: 14). It is noteworthy in this context that Abraham Ibn Ezra is credited with having introduced both the game of chess (Montaner 1989: 1–9) and the Indian zero to the Latin world (Sela 2003: 20–21).

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3 Capricorn is the domicile of Saturn, which produces the Saturn-Mercury combination cited by al-Andalusī.

4 This passage is translated by Shlomo Sela and published in *Abraham Ibn Ezra and the Rise of Medieval Hebrew Science* (2003: 348).

3. KANKA, MĀSHĀʾALLĀH AND THE SINDHIND

When Ṣāʿid al-Andalusī wrote his history of the sciences in 1068, some Indian astronomical and astrological knowledge had reached Spain, but original texts were especially scant. He wrote, "Since Indians are far from our country and many kingdoms separate us from them, we have very few of their books. Only a small fraction of their knowledge and a few fragments about their religions have reached us, and we have heard about only a small number of their scholars." (al-Andalusī 1991: 12)

Indian astrology was seen to have entered Spain in three ways. The first was the mythical, almost single-handed introduction of Indian learning into the Abbasid court by Kanka, the Indian astrologer. Second was the transmission of Indian and Persian astrology by the Persian Jew Māshāʾallāh, who became one of the central sources of Ibn Ezra and indeed the whole medieval astrological tradition. Finally, the astrological tradition depended on the transmission and gradual development of astronomical tables known in the Muslim world as *zījes*, with the tradition of tables originating in India coming to be known as the "Sindhind".

3.1 From India to the Arab world: Kanka the Indian and Māshāʾallāh

In his introduction to the translation of Ibn al-Muthannā's commentary on al-Khwārizmī's astronomical tables, Ibn Ezra tells a story about the initial introduction of Indian science to the Arab world: "there appeared a great king in Ishmael, called Al-Ṣaffah, who heard that there were many sciences in India. And he gave orders to search for a scholar who would know the language of India and that of Arabia, so as to translate for him one of their books of wisdom, although he feared that a calamity might befall him.[5] [...] He had heard that in India there was a book, very important in the councils of the kingdom [...]."[6]

In the story, the king sends a Jew from his court to India in order to bring back an astrologer who could initiate the Arabs into their secrets. The Indian he brought back was called Kanka (or Kanaka) and, according to this story, Kanka taught the Arabs the nine numerals and the zero, as well as trigonometry and astronomy (Smith & Ginsburg 1918: 102). Kanka is also mentioned by al-Bīrūnī in a very similar context (Pingree 1971: 113). Virtually nothing beyond this is known about Kanka the Indian.

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5 He feared he would be punished because of his search for extra-Islamic knowledge.

6 Ibn Ezra's introduction is translated by Smith & Ginsburg and is published in the article "Rabbi Ben Ezra and the Hindu-Arabic Problem" by the Mathematical Association of America (1918: 101).

In reality, Indian astronomy-astrology entered Islam via several routes. A principal figure in this process was the 10th-century astrologer Māshā'allāh Ibn Atharī. Ibn Ezra presents Māshā'allāh as an Indian astrologer (Ibn Ezra 1939: lxvii, 224; 2007: 59), but in fact Māshā'allāh was born in Persia. He was also a Jew, a fact that Ibn Ezra curiously does not mention. Māshā'allāh was instrumental in the introduction of Indian and Persian astrology to Islam, as he was familiar with both Indian and Sassanid forms. Māshā'allāh is now considered to be one of the most important sources on Zoroastrian astronomy and astrology (Pingree 1971: v).[7] Ibn Ezra refers approvingly to Māshā'allāh's work in most of his astrological texts, especially on issues of general astrology (i.e. the prediction of weather and the fate of nations, kingdoms or cities).[8]

A Hebrew translation of Māshā'allāh's *Book of Eclipses* has long been attributed to Ibn Ezra. Sela has argued, however, that many of the typical features of Ibn Ezra's Hebrew terminology are absent from this translation (Sela 2003: 75–76), a situation that seriously weakens the argument for Ibn Ezra's involvement with it. In any case, that Māshā'allāh was an eminent authority for Ibn Ezra has not been called into question.

3.2 The fate of the Zīj al-Sindhind in Spain

Medieval astrologers relied heavily on astronomical tables, which listed the positions and rising-times of various celestial bodies. Because there were no clocks with which to determine the exact time, making accurate observations could be extremely difficult. An astrolabe could be used for this purpose, but astrological prediction required such varied and precise information (especially for the ascendant) that in day-to-day practice the astrologer relied on the best tables he could find (Tester 1987: 161). It is understandable, therefore, that a great tradition of making, developing and correcting astronomical tables emerged and flourished during the Middle Ages.

The first tables in use in the Arab world were based on Indian observations. Around 770 CE, the Sanskrit text *Mahāsiddhānta* was translated into Arabic. These translations became known by the name *Zīj al-Sindhind*. Al-Khwārizmī compiled the *Zīj al-Sindhind* around 820, something that would spur much original development in Arabic astronomy (Pingree 1998: 330). Al-Khwārizmī's tables survive in Ibn al-Muthannā's commentary, which Ibn Ezra translated into Hebrew in 1160 (Sela 2003: 77).

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7 See also Sela's commentary on the *Book of Reasons* (Ibn Ezra 2007: 145).
8 These are the main topics of the *Book of the World* (Ibn Ezra 2010).

The Sindhind tradition reached al-Andalus in 821–852, during the rule of ʿAbd al-Raḥman II. According to the story, the emir sent one of his court astrologers to Iraq to acquire books and among those brought back was the *Zīj al-Sindhind*. The tables were further developed in Spain. In 1068, Ṣāʿid al-Andalusī, whose history of the sciences has already been mentioned here, wrote a treatise in defense of the Sindhind tradition. Following Samsó, Pingree suggests that Ṣāʿid al-Andalusī was also part of the group that produced the *Toledan tables* (Pingree 1998: 336), which marked the shift of focus of Arabic astronomical development from Iraq to Spain.

In the introduction to his translation of Ibn al-Muthannā's commentary on al-Khwārizmī's tables, Ibn Ezra comments on the lack of proofs in the Indian system: "No explanation of these matters was set forth in the book, only operations in the form of rules to be accepted on faith." (Smith & Ginsburg 1918: 102) This complaint echoed the commentary that Ibn Ezra was introducing. According to Ibn al-Muthannā, "their [the Indians'] authors did not give any proof for what they told us to do, but they left it to us, and presented them as a matter of tradition without any discussion." (Smith & Ginsburg 1918: 106)

Because of this lacuna, the Indian system was supplemented with material from Ptolemy, whose texts provided Arab interpreters with a more theoretical approach (Pingree 1998: 333), more "reasons". This practice of complementing Indian material with Ptolemaic material is clearly observable in Ibn Ezra's texts. In the *Beginning of Wisdom*, his introduction to the basic elements of astrology, Ibn Ezra describes the constellations, first according to Ptolemy and then according to the Indian scholars. This comparison is made systematically for each of the zodiacal signs, with respect to decan rulers and exaltations (Ibn Ezra 1939: 156–187/viii–xxxvi). Ibn Ezra seems to accord equal value to Ptolemy and the Indian system. Or perhaps he was simply letting his readers know that there were two differing traditions involved. In the *Book of Reasons*, he complains that with regard to the Indian decan rulers and exaltations, their "reason" is unknown (Ibn Ezra 2007: 41).

In the opening lines of the *Book of the World* (2010: 53), Ibn Ezra attacks Abū Maʿshar for using the Indian astronomical tables to predict conjunctions of Saturn and Jupiter, and more specifically, their ascendant. The gist of Ibn Ezra's criticism was that determining the ascendant requires precise data and the tables used by Abū Maʿshar were not only outdated, but there was a fundamental difference in the ways that the Indian system and the Ptolemaic one measured time. While the sidereal year was used in India, Ptolemy used the tropical year.

Explaining this difference in a discussion of bright and dark degrees in the *Book of Reasons*, Ibn Ezra gives his readers a stern reminder that these cannot be

directly imported into the Ptolemaic system since they are based on the sidereal year. Ibn Ezra warns that although both the sidereal and the tropical year are valid in and of themselves, one must always take care to calculate correctly between them. The distinction was important because, as Ibn Ezra correctly asserts, a system based on the sidereal year does not have to account for precession, but also does not allow for computation of the ascendant (Ibn Ezra 2007: 51–53). This example serves as a reminder that the astronomical tradition was dual, requiring careful and expert harmonization between the Indian and Ptolemaic astrological systems.

4. PREDICTING RAIN AND TAMING THE DRAGON

Ibn Ezra ascribed several specific astrological doctrines to Indian scholars. His opinions about them varied. Sela identifies two such doctrines that feature prominently in the *Book of the World*. One is the doctrine of the twenty-eight mansions of the Moon; the other is the "opening of the door". Both are related to the art of predicting rain.[9] (Sela 2010: 22–25) But there were other doctrines that, according to Ibn Ezra, had Indian origins. He attributed to Indian scholars the practice of treating the lunar nodes like planets, as well as the division of each zodiacal sign into so-called "ninth-parts".

4.1 The lunar mansions and the "opening of the door"

Perhaps the best-known feature of Indian astrology in use throughout the Middle Ages was the system of twenty-eight lunar mansions (*maḥanot ha-levanah*). In fact, the mansions were originally Babylonian (Tester 1987: 82), but they entered mainstream medieval astrology in Indian garb. The ecliptic was divided into twenty-eight parts, called *nakshatras*, which were associated with particular deities.[10] In Arabic astrology, this doctrine was merged with the pre-Islamic doctrine of *anwa'*, a system of twenty-eight fixed stars along the ecliptic, whose risings and settings defined the course of the year for nomadic Arabs. In medieval astrology, the lunar mansions were almost always associated with predicting rain. Ibn Ezra lists and describes these in several of his texts, generally in a favorable tone.

Ibn Ezra also wrote approvingly about the Indian rules for the "opening of the door" (*petiḥat ha-sha'ar*), as he describes it in the *Book of the World* (2010: 83–85,

9 See Sela's introduction to the *Book of the World* (Ibn Ezra 2010: 22–25).
10 See al-Bīrūnī (1910: vol. I 218–219, vol. II 81–89).

179–181). An "opening of the door" is said to occur when, at the conjunction or opposition of the sun and moon, the planet that rules the sign in the ascendant moves opposite the planet that rules the sign opposite to the ascendant.[11] The "opening of the door" was believed to have a powerful effect on the weather, especially on rainfall. The doctrine also features elsewhere in Arabic astrological literature, but it is not generally attributed to Indian scientists (as done by Ibn Ezra).[12]

Of the astrological rules presented by Ibn Ezra for weather-prediction, nearly all are attributed to Indian astrologers – whether to Māshā'allāh, whom he believed to be Indian, or to Indian scholars in general.

4.2 The lunar nodes and their epistemological implications

There was a tendency in medieval astrology to treat the lunar nodes as if they were planets. Although this practice was alien to Ptolemaic doctrine, it was present in late Greek astrology and manifested most prominently in Persian and Indian astrology. Ibn Ezra attributes the practice to Indian scholars.

The lunar nodes, or "the Head of the Dragon and his Tail" (*rosh ha-teli u-zenavo*), are the two points of intersection between the moon's orbit and the ecliptic. The tradition of viewing these points as the two ends of a celestial dragon stretching over the earth dates back to Babylonian times, but its ultimate origin is unknown. Although medieval scholars disregarded its mythical form, it had nevertheless become common to view the two end points as equivalent to planets and to ascribe them the according exaltations, domiciles and characteristics. (Tester 1987: 121–122, 162) Ibn Ezra comments on this practice, "The Indian scientists said that the exaltation of the Head of the Dragon is at Gemini 3°, and there [too] is the dejection of the Tail [of the Dragon], but Ptolemy laughs at them because the Head of the Dragon is not a star; and he is correct." (Ibn Ezra 2007: 57)

The phrase "Ptolemy laughs at them" is repeated several times in this text in relation to Indian doctrines. It seems all the more harsh, considering that Ptolemy does not even mention these teachings. This was Ibn Ezra's way of saying that Indian astrological material had to be interpreted in relation to Ptolemy. The phrase, although it sounds disrespectful, may mean little more than that, if viewed in terms of the Ptolemaic system, this or that particular doctrine is impossible or absurd.

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11 The moment of the conjunction or the opposition of the sun and moon (i.e. the new or full moon) is an astrologically significant moment.

12 See Sela's commentary to *The Book of the World* (Ibn Ezra 2010: 221).

Ibn Ezra did not entirely discredit the importance of the nodes, however. Later on in the *Book of Reasons*, he explains the effects of the nodes on the planets, "As for what they said, namely, that a planet is afflicted when it is with the Head of the Dragon or with its Tail, this is the opinion of the Indians. But the truth is that [when it is] with the Tail it is malefic, but when it is with the Head it is only benefic [...]." (Ibn Ezra 2007: 85) The distinction made here by Ibn Ezra is that while the nodes (i.e. the points of intersection) cannot have the independent properties of planets or behave like them, they are still, in Ibn Ezra's mind, meaningful locations. This is because the planets react as they pass through them, in the same manner that they interact with the zodiacal signs as they pass through them.

Epistemologically, the discussion about the true nature of the lunar nodes is akin to Ibn Ezra's discussion about the difference between the zodiacal signs and the constellations that give them their names. In the *Book of Reasons*, he criticizes the Indian scholars for treating the signs as equivalent to their constellations, and explains, again asserting that Ptolemy "laughs" at them, that the division of the ecliptic into twelve signs is done on purely mathematical grounds. (Ibn Ezra 2007: 53, 91) Both issues are part of his attempt to clarify the important relationship between theory and observation, which were still undefined in Ibn Ezra's time (Saliba 1994: 77).

4.3 The ninth-parts and the nine numerals

Another distinctly Indian feature of astrology was the division of each zodiacal sign into nine parts, the so-called ninth-parts (*tishyot*). Ibn Ezra explains, "Because the triplicity is completed in the ninth house [i.e. the ninth sign], the Indian scientists divided the sign into nine parts, which are called ninth-parts, and also [because] nine is the last of the digits." (Ibn Ezra 2007: 49)

There were many medieval methods of dividing the signs into parts. The most common were the *dodecatemoria* (twelve parts), *decans* (three parts of 10° each), and *terms* (of unequal sizes, according to several different rules). All were intended to add precision and detail to astrological prediction. The Indian origin of the division into specifically nine parts is confirmed by al-Bīrūnī (1910: vol. II 223; 1934: §455; Tester 1987: 164).

Ibn Ezra, always seeking to provide reasons for the rules he presents, refers to the fact that each triplicity comes full circle in nine signs,[13] an argument found

13 For example, the first sign, Aries, is of the triplicity of fire. The ninth from it (including Aries itself) is Sagittarius, the last fire-sign.

in many standard medieval works on astrology. The attribution of the ninth-parts to the nine numerals is, however, according to Sela, unique to Ibn Ezra.[14] A recurring element in Ibn Ezra's works is the preoccupation with numbers. In this context, it is significant that Ibn Ezra ascribes to Indian scholars both the numerals themselves and this method of sign-division based on them.

5. CONCLUSIONS

Indian astrological elements were still very much present in 12th century Muslim Spain after having traveled to the other end of the Muslim empire. A more or less correct attribution of their origin had also survived, at least within the elite circles of the scientific community to which both Abraham Ibn Ezra and Ṣā'id al-Andalusī certainly belonged.

Ibn Ezra was divided in his opinion of the value of Indian astrology. On one hand, he participated greatly in its transmission to the West. On the other, he was deeply aware – and tried to make his readers aware – of its limitations and the pitfalls involved in their uncritical or inexpert application.

In Ibn Ezra's mind, India was the source of the most fundamental principles of science, such as the numerals and zero. Its scholars were exempt from the Ptolemaic rule which would have made them incapable of intellectual achievement. Indian scholars were also worthy of respect as the originators of several useful astrological doctrines and techniques, in particular in matters of general and weather-prediction. Ibn Ezra was also aware of their role in the development of the all-important astronomical tables, but also of the shortcomings of those early tables as used in his own time.

14 See Sela's commentary to the *Book of Reasons* (Ibn Ezra 2007: 291).

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