The Dragon in Medieval Islamic Astrology and its Indian and Iranian Influences

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The ancient practice of astrology, the interpretation of the movement of the stars in the sky as reflecting divine powers and enabling prognostication of the future, had a deep and pervasive influence on early and medieval Islamic thought and culture.[1] The history of astrology, which had been introduced into the Iranianised world of Central Asia through Graeco-Babylonian influence, goes back to ancient times. Moreover, with the spread of Buddhism into Central Asia, Iran and China, Indian *nakṣatra* (lunar asterism) astrology was introduced.[2]

Later Parthian (250 BC–224 AD) and Sasanian (224–651 AD) kings are recorded to have maintained a "chief of the star-gazers" (*axtarmārānsālār*) at court where a regnal horoscope would be drawn up for each king. However, only during the reign of the

[1] The ʿAbbāsid caliphs, in particular al-Manṣūr, accorded particular prominence to the study and practical application of astrology. Gutas 1998, 16 and n. 7, and 33.

[2] The *Śārdūlakarṇāvadāna*, which contains an exposition of the system of the twenty-eight *nakṣatra*s, was widely diffused (*idem*, 240–1) and summarised in Chinese by the Parthian prince An Shih-kao in the second century AD (*Śārdūlakarṇāvadāna of the Divyāvadāna*, tr. Mukhopadhyaya, S., Santiniketan 1954, 213–7; and on An Shih-kao, see Zürcher 1959, vol. 1, 32–4; cited after Pingree 1963, 240–1) and fully translated twice in the third century AD (*Śārdūlakarṇāvadāna*, tr. Mukhopadhyaya 1954, xii–xiii, cited after Pingree 1963, 240–1). A fragment of a Sanskrit text written in about 500 AD was among the Weber manuscripts found south of Yarkand (Hoernle 1894, 1–40**;** cited after Pingree 1963, 241 and n. 90) and fragments of fifth-century birch-bark manuscripts of the *Mahāmāyūrīvidyārajñī*, which also deals with *nakṣatra* astrology, are preserved among the Bower and Petrovski manuscripts discovered near Kashgar in 1889 (Hoernle 1893–1912, pts. 6–7, 222–240e and pl. xlix–liv; and Levi, 1915, 19–138**;** cited after Pingree 1963, 241 and n. 91). According to Pingree (1963, 241) the texts most probably passed through Buddhist communities in the eastern provinces of the Sasanian Empire to reach these regions; moreover, one finds the remains of this Buddhist influence in the second chapter of the Bundahishn, where the twenty-eight *nakṣatra*s are listed with Persian names (*Bundahishn* 2.2, *Sacred Books of the East,* tr. West, E.W., vol. 5, Oxford, 1880, 11; Henning 1942, 229–248).

Sasanian King Shāpūr I (r. 241–271) was the study of Iranian astronomy and astrology known to have been encouraged. According to the *Dēnkard* (Book IV), the ninth-century compendium of the Zoroastrian religion (which epitomises orally transmitted knowledge of the priests of the time and so comprises material that reaches far back into the history of Zoroastrianism), the king is noted to have gathered the astrological writings "which were dispersed throughout India, the Byzantine Empire and other lands" (Zaehner 1955, repr. 1972, 8; Pingree 1963, 241; Gutas 1998, 36, see also 41). During the last centuries of Sasanian rule the influence of the sciences of astronomy/astrology, which were often a synthesis of Indian and Hellenistic theories, was particularly pervasive. According to the great tenth-century Khwārazmian scholar Abū ʾl-Rayḥān Muḥammad ibn Aḥmad al-Bīrūnī, another Sasanian ruler who encouraged Greek or Graeco-Syrian and Indian scholars in Iran was Khosraw I Anūshirwān (r. 531–579) (Kennedy 1956, 130). According to a tradition reported by the great poet Abu ʾl-Qāsim Firdawsī of Ṭūs (*c*. 329–30/940–1–*c*. 411/1020 or 416/1025), author of the monumental versified epic, known as the *Shāh-nāma*, the colossal throne (*taq-i taqdis*) of his grandson, the last Sasanian king Khosraw II Parwīz (r. 590–628), was embellished with images of the seven regions as well as the seven planets and the twelve signs of the zodiac (tr. and ed. Mohl 1838–1878, vol. 6, 253).[3] As the centre of the astrological throne the ruler represented the one who held the power to influence the stars (Herzfeld 1920, 1–24 and 103–147). Political crises were regarded as inevitable at acute aspects of the constellations.[4]

Sanskrit astrological works were popular in the Iranian world. The early Islamic astrologers included numerous Indian theories into their works, most of which must have reached them through Middle Persian, or Pahlavi texts (Pingree 1963, 242). To this were added the direct translations from Sanskrit into Arabic during the early ʿAbbāsid caliphate that had come to power in 132/750 and soon established itself in the newly

[3] Comparable imagery is reported second-hand from Theophanes through Kedrenos that in Ganzaca (Ganjak) when Heraclius captured Khusraw's palace in 624, he saw Khusraw's image in the domed roof of the palace, as though enthroned in heaven and surrounded by the sun, moon and stars. Texts cited in full in Herzfeld, 1920, 1–3; L'Orange 1953, 18–27, esp. 19–21. Cf. also Carter 1974, 177 and n. 25.

[4] On court astrologers, cf. Christensen 1944, 396; on horoscopes, see Kennedy and Pingree 1971, vi; see also Russell 2004, 85 and n. 11.

founded capital of Baghdad. The ʿAbbāsid period moreover saw an unprecedented level of activity in the sciences of astronomy/astrology. Middle Persian astronomy/astrology was largely mediated through astronomers/astrologers of Iranian and Indian origin at the ʿAbbāsid court, such as Māshāʾallāh ibn Atharī (an Iranian Jew who may have converted to Islam), Abū Sahl al-Faḍl ibn Nawbakht (who had converted from Zoroastrianism to Islam), Abū Ḥafṣ ʿUmar ibn al-Farrukhān al-Ṭabarī and Kankah al-Hindī[5]. These activities had a profound effect on social attitudes (Gutas 1998, 108–10). Indeed astronomy was viewed by scholars as the "mistress of all science" (Ullmann 1972, 277, n. 5).

The works of many early Islamic astronomers/astrologers incorporated numerous Indian astronomical/astrological theories. Islamic scholars moreover came in direct contact with Indian astronomy/astrology after the conquests of Sind and Afghanistan and through an embassy from Sind that arrived at the court of the caliph al-Manṣūr in Baghdad circa 155/777 (Pingree 1963, 242–4. Ragep, F. Jamil, "Astronomy," *EI*^{3}). Al-Manṣūr ordered his astronomers to translate a Sanskrit text into Arabic with the assistance of a member of the embassy who was learned in astronomy. The work came to be known in Arabic as the *Zīj al-Sindhind al-kabīr* and is based on a text called the *Mahāsiddhānta*, whose own source is purportedly a work of the renowned Brahmagupta (b. 598) (Ragep, F. Jamil, "Astronomy," *EI*^{3}).

One of the most important scholars who transmitted Indo-Iranian astrology is the well-known ninth-century astrologer Abū Maʿshar Jaʿfar ibn Muḥammad ibn ʿUmar (d. 272/886) from Balkh, known in the West as Albumasar. In his *Zīj al-hazārāt* ("The Zij of the Thousands") he combines Hindu, Sasanian and Hellenistic astronomical/astrological traditions, claiming to have used an ancient Iranian text from antediluvian times written during the reign of Ṭahmūrath (Av. Takhma Urupi), the second king of the Pīshdādian dynasty of legendary epic Iranian history.[6] However, as Pingree has shown, the so-called

[5] On Kankah al-Hindī, see Pingree 1970, 17.

[6] The legendary history of king Ṭahmūrath is recorded, for instance, by al-Thaʿālibī in his *Taʾrīkh Ghurar al-siyar* (tr. and ed. Zotenberg 1900, 7–10) in which he also describes the king's subjugation of Iblīs demonstrated by his using Iblīs as mount to perambulate the world. Cf. Pingree 1963, 243–4 and *idem*,

Thousands of the Iranians is "really an eclectic Indian system" (Pingree 1963, 244). Ibn al-Nadīm quotes passages from Abū Maʿshar's *Kitāb ikhtilāf al-zījāt* ("The Book on the Variations among *zījs*"), which contain calculations determining the movement of the planets:

"The people of the time of Tahmurath and the more ancient Persians called these the "cycles of the thousands"; and the wise men of India and their kings, the ancient kings of Persia, and even the ancient Chaldeans who lived in Babylon determined the mean longitudes of the seven planets by means of them, preferring them over others because of their accuracy and brevity" (*Fihirist*, Cairo, n.d., 348–50, cited after Pingree 1968, 3–4).

In fact both sciences, astronomy (*ʿilm al-hayʾa*, the "science of the figure (of the heavens)" or *ʿilm al-falak*, "science of the spheres") and astrology (*ʿilm al-nujūm*, "science of the stars"), were for a long time so close that the word *munajjim* was used to designate both astrologer and astronomer (Fahd, "Munadjdjim," *EI*[2]). This is based on the fact that, according to the eighth- or ninth-century alchemical author Jābir ibn Ḥayyān (known to the Latins as Geber),[7] one of the main representatives of earlier Arabic alchemy:

"the astrologer must be a mathematician; he must have mastery of astronomy, this is a part of *ʿilm al-nujūm* (the "science of the stars" or astrology). For *ʿilm al-hayʾa* (astronomy) is the description of the situation of the state of the sky and what it contains (*ṣūrat waḍʿ al-falak wa-mā fīhi*), whereas astrology is the "gift of the planets (*ʿaṭāʾ al-kawākib*)" (Sezgin 1971, 132–269).

Astrology, which involves calculating the position of the planets and the mathematical production of horoscopes, is often referred to as judicial astrology (*ʿilm aḥkām al-hayʾa*, the "science of the judgment of the stars") (Savage-Smith 2004, xxxvii). Astrological predictions consisted not only of determining the fate of an individual (*mawālīd*,

1968, 3–4 and n. 3. The culture hero Takhma Urupi riding Angra Mainyu as his horse from one end of the earth to the other is mentioned twice in the Avesta (Yasht 15.11–2, 19.28–9).

[7] On Jābir ibn Ḥayyān, see Sezgin 1971, 132–269.

"genethlialogy," or horoscopic astrology) and of hemerology (*ikhtiyārāt*, "choices"), but also of the application of continuous horoscopes for determining the course of events for a country or dynasty or to answer specific questions (*masā'il*, "interrogations") (Fahd, "al-Nudjūm, Aḥkām," *EI*^{2}; Savage-Smith 2004, xxxvii; Saliba 1992, 56–63).

The idea that eclipses of the Sun and the Moon were caused by the interference of the eclipse monster was widely held throughout the Eurasian continent and can be traced back to remote antiquity (Hartner, "Al-Djawzahar or al-Djawzahr," *EI*^{2}). The fearful monster, which quenched the light of the supreme luminaries by seizing them in its jaws, was generally conceived as a giant serpent or dragon, an iconography thought to be of oriental origin.[8] Its function was thus seen to be that of threatening and "devouring," as well as "delivering" and protecting the great luminaries at certain irregular intervals.[9]

A number of theories arose to explain the dragon's role in the phenomena of solar and lunar eclipses and lunar waxing and waning. Khāleqī-Moṭlaq offers the following summary:

"...a dragon comes up from hell every month on the eastern side of the sky and swallows a piece of the moon's disc every night until the night comes when no part of the moon can be seen. Then the moon-god kills the dragon from inside its belly and triumphantly re-emerges. In later times, however, the sun took over the moon's role in the celestial combats, and it was the sun which slew the dragon and rescued the moon from the dragon's belly twelve times every year" (Khāleqī-Moṭlaq, "Aždahā II. In Persian Literature," *EIr*).

[8] In ancient Babylon "the 28th of the month was a day of lamentations when prayers of penitence were offered, because the moon had disappeared from view and was to remain hidden for a few days in the power of the dragon." Green 1992, 29; Hartner 1938, 132, n. 24. The "Chaldeans" considered the dragon to have been created even before the constellations and the planets, and guarding over the universe with its head towards the sunrise and its tail to the sunset. MacKenzie 1964, 525, and *idem*, "Gozihr," *EIr*.

[9] Hartner 1938, 131. See also the Babylonian Talmudic tract *Avodah Zarah* ("Mishna on Idolatry," VIII a) in which the dragon is portrayed as devouring the sun. See also Epstein, 1997, 76.

The idea that these phenomena were caused by a body whose head and tail intercept the Sun's and the Moon's light was probably related to the emergence of definite ideas as to the nature of the orbits of the Sun and the Moon and their opposite points of intersection between the Moon's orbit and the ecliptic (Khareghat 1914, 129). The classical theory of the dragon myth seems to have been modified in accordance with developments in astrological doctrine at least from late Arsacid and Sasanian times onwards. Sasanian astrologers received from India the notion of Rahū, a celestial serpent whose head (*siras*) and tail (*ketu*) cause eclipses.[10] In Pahlavī Rahū was referred to as Gōčihr, his head *sar*, and his tail *dumb*; in Arabic, the latter were respectively called *ra's* and *dhanab* (Pingree 2006, 240).

The serpent-dragon accrued a range of negative aspects following changes brought about by the rise of Zoroastrian cosmological dualism according to which the contents of the world were made and arranged by two primordial entities, the one good, causing light and life, and the other bad, causing darkness and death. Astrology offered support for Zoroastrian apocalyptic ideas according to which the planetary bodies were regarded as evil; the "good" luminaries, the Sun and the Moon, were removed from the category of the seven planets whose intrusion brought injustice into the world (Khareghat 1914, 129; Brunner, "Astronomy and Astrology in the Sasanian Period, s.v. Astrology and Astronomy in Iran," *EIr*, 862–8). Consequently the Sun and the Moon were substituted by two "demonic" opponents, the head and tail of the dragon (Pahl.

[10] For an analysis of the origin of the concept of Rāhu, see De Mallmann 1962, 81; Markel 1995, 55–64; Pingree 2006, 240. In the Rigveda (5.40.5–9) Rāhu is known as a demonic being, *Svar-bhānu-*, which is said to have pierced the Sun with darkness. In post-Vedic mythology *Svar-bhānu* is replaced by *Rāhu-*, his name sometimes being conferred upon the latter; *Svar-bhānu-* perhaps meaning "who has the effulgence of the sun" or "who is affected by the effulgence of the sun." Advanced knowledge of periodical eclipses of the sun and the moon led to the belief in two demonic beings, the red *Rāhu-* and the black *Ketu-*. See Scherer 1953, 100–1. Representations of Rāhu in a narrative context begin to appear in Indian art slightly earlier than his iconic portrayal as a member of the planetary deities. One of the earliest known portrayals of Rāhu being in a relief of the "Churning of the Ocean" carved over the facade of the doorway of cave temple number nineteen at Udayagiri in the Vidisha district of Madhya Pradesh, which probably dates from *c*. 430 to 450. The planet is shown as a large horrific head with bulging eyes with a fierce, demonic expression turned to the right, his hands probably cupped together with palms facing upward in the gesture of scooping the elixir of immortality (on the legend, see the discussion below). Williams 1982, 87 and pl. 117.

gōčihr which stems from the Avestan *gao čithra*, "having the seed of cattle," "the stock epithet of the moon" (Zaehner 1955, repr. 1972, 164, n. E; MacKenzie 1964, 515, n. 26) (cf. *Bundahishn* 5, A. 5, 52.12–53.1, Brunner, "Astronomy and Astrology in the Sasanian Period,"*EIr*, 862–8; Hartner, "Al-Djawzahar," *EI*^{2}). According to the *Bundahishn* ("Book of Primal Creation"), a Pahlavī commentary on an Avestan text, Gōčihr is portrayed in "the middle of the sky, like a serpent; its head in Gemini (*dō-pahikar*) and its tail in Centaurus (*nēmasp*), so that between its head and tail there were six constellations in all directions" (*Bundahishn* 52.1, Zaehner 1955, repr. 1972, 164, n. E, 416–7; cf. Skjarvo, "Aždahā I," *EIr*; MacKenzie 1964, 515, 525).

In contradistinction to the original meaning of *gao čithra*, the light and fecundity attribute of the Moon, the dragon's head (*gōčihr sar*) and tail (*gōčihr dumb*) came to represent the demon of eclipses that intercepts the light of the luminaries, the personified dark principle and direct antagonist of the luminaries (Hartner 1938, 153; Duchesne-Guillemin, 1990, 17–9). This led to the concept of a polarity of good and evil throughout the cosmos; the eclipse demon being referred to as Dark Sun and Dark Moon, "dark" meaning "obscured," and "eclipsed."[11] Thus, according to the *Bundahishn*, the serpent-like (*mār homānāg*) Gōčihr and Mūshparīg, with tail (*dumbōmand*) and wings (*parrwar*), are said to be the evil opponents of the stellar constellations and are therefore *bound* to the Sun's path to restrain their capacity to cause harm.[12] The Sasanian conceptualisation appears to be a reflection of the Indian, for, as Pingree points out, the *Sūryasiddhānta*, written between the tenth and eleventh century AD, explains "the anomalies in planetary motion by the activities of demons stationed at the sun, the apogees, and the nodes, who pull the planets along by chords of wind."[13] The expulsion of evil from the sky is manifested by the plunging to earth of Gōčihr (*Bundahishn* 34.17, 225.1–3, cited after Brunner, "Astronomy and Astrology in the

[11] *Bundahishn* (5.4, 49.13–15) and the late ninth-century catechism *Shkand-gumānīg wizār* ("Doubt Dispelling Exposition") 4.46, cited after Brunner, "Astronomy and Astrology in the Sasanian Period" *EIr*.

[12] "[The sun's opponent, the "tailed Mūsh Parīg"] is tied to the sun's chariot but occasionally becomes loose and does great harm"; *Bundahishn* 5.4, 5 A.6–7, 50.6–7, 53.1–5, and *Shkand-gumānīg wizār* 4.46, cited after Brunner, "Astronomy and Astrology in the Sasanian Period," *EIr*. Cf. Zaehner 1955, repr. 1972, 164, n. E. MacKenzie 1964, 513, 516; Hartner 1938, 151.

[13] Based on the plausible supposition that either an earlier version of the *Sūryasiddhānta* or a very similar text must have been translated into Pahlavi, perhaps under Khosraw I. Pingree 1963, 242.

Sasanian Period," *EIr*), who sets the earth on fire and whose permanent body will only be destroyed by resurrection (*Bundahishn* 30.31, quoted after Khareghat 1914, 128).

In the history of ancient Indian astronomy throughout the pre-Siddhāntic period, only Rāhu (the *grahaḥa*, "seizer") was held "responsible" for causing eclipses by devouring the Sun and the Moon (Santoro 2006, 547). Ketu (the tail of the dragon), understood as a planet[14] that generates comets with its fiery tail, is first mentioned in the *Atharvaveda* (19.9.8–10).[15] Both Rāhu and Ketu appear in the great epic *Mahābhārata* (1.5.15–7), in which the demon Rāhu allied with the celestial gods in the struggle against the world serpent, Ananta. After the victorious event, he assumed a disguise and thus succeeded in drinking from the most beneficial of substances, the *amṛta* (lit. "non-dying"; Av. *haoma*, Vedic Skt. *soma*)[16] containing the miraculous herb of immortality. But the Sun and the Moon having detected his deception denounced him to the gods, whereupon Vishnu swiftly threw his discus *(sudarśanacakra)* and severed Rāhu's head. However, the drink had already produced its effect so that his head and tail both survive, immortalised, as invisible planets and intransigent enemies of the luminaries. As a consequence, the Sun and the Moon are periodically – in symbolic terms – "swallowed" or "disappear in" the vengeful monster that thus causes solar and lunar eclipses (Hartner 1938, 131, and *idem*, "Al-Djawzahar or al-Djawzahr," *EI*^{2}).

In the later, "scientific" phase, when Indian notions were transmitted to the Central Asian and Iranian world, the two parts of the eclipse monster are identified with the lunar nodes which play a crucial role in the eclipses (Hartner 1938, 131, and *idem*, "Al-Djawzahar or al-Djawzahr," *EI*^{2}). At the beginning of celestial motion the head, Rāhu, that is to say the ascending node of the Moon's orbit upon the ecliptic, was in Gemini and Ketu, the tail of the bisected monster, in other words the descending node, was in

[14] Of significance is the original meaning of the Sanskrit word *ketu* meaning "light", "clarity" (synonymous with the etymologically related adjective *citra* of the Pahlavī *gōčihr*), which is in apparent contradistinction to the light-devouring function of Ketu as eclipse demon. For the evolution of the meanings of "ketu," see Hartner 1938, 152–3.

[15] Scherer 1953, 101–3, for further names of Rāhu and Ketu, see esp. 102–5. Cf. Markel 1995, 56, 65; Santoro 2006, 547.

[16] For a brief resume on the discussion of the etymology of the term *amṛta*, see Long 1976, 181–2, n. 22. Cf. Janda 2010, 29, 55.

Sagittarius (*al-qaws*, lit. "bow"), often represented as an armed centaur.[17] The 180° extent of the dragon reflects the fact that the nodes occupy diametrically opposite points of the ecliptic. Hence the dragon's body is conceived as arched across the sky (*Bundahishn* 5.4, 49.13–15, cited after Brunner, "Astronomy and Astrology in the Sasanian Period," *EIr*, 867).

The demon Rāhu is well known not only in the Brahmanic tradition, but also in Buddhism (Santoro 2006, 547). In the Buddhist *Jātaka* stories of the previous births of Gautama Buddha, which were familiar throughout the Central Asian region, repeated reference is made to the Moon gripped between Rāhu's jaws, or being liberated from the latter (Hartner 1973–74, 110). Thus, in the *Gandhāra-Jātaka*, the king of Gandhāra chose to become an ascetic after observing a lunar eclipse, explaining that:

"Taking the moon's orb seized by Rāhu as my theme I forsook my great kingdom and took the religious life."

because:

"There is the moon's pure orb become dark by trouble from outside; now this kingdom is a trouble to me: I will take the religious life so that the kingdom does not make me dark as Rāhu does the moon's orb"(Cowell 1895, repr. 2000, 222–3).

In the *Buddhacarita* Siddhārtha's son is called Rāhula "with the face of Rāhu's adversary" (Johnston 1936, repr. 2004, 29. Cf. Santoro 2006, 547).[18] It is of note that in some Pali texts the demon Rāhu is said not to devour the Sun and the Moon, "but merely to caress them with his hand" (Malalasekera, G.P., *Dictionary of Pāli Proper Names*, 2

[17] Brunner, "Astronomy and Astrology in the Sasanian Period," *EIr*, II, 867. The dragonhead projecting from the centaur's tail represents the descending node's exaltation in Sagittarius; however, although the latter is the dragon's "tail" (*dhanab*) and not its "head" (*ra's*), and hence the representation of the "head" is an iconographic inconsistency, it has come to symbolise the astrological association. Hartner 1973–74, 110.

[18] The concept is evoked in yet another line: "Deliver Rahula from grief for his parent as the full moon from eclipse by Rāhu." See Johnston 1936, repr. 2004, 129.

vols., 1938, repr. 1974, vol. 2, 735–7, cited after Strong 1992, 156). In the well-known story of the so-called *Candrasūtra* (Pali *Candimā-sutta*, "Discourse on the Moon") the Buddha reprimands Rāhu and directs him to release the Moon at once which Rāhu does because he realises that otherwise his head will be split into seven pieces (Malalasekera, G.P., *Dictionary of Pāli Proper Names*, 2 vols., 1938, repr. 1974, vol. 2, 735–7, cited after Strong 1992, 156). The Buddha thus delivers the Moon (that is the god dwelling in the Moon), who had appealed to him for refuge, from Rāhu's clutches (Waldschmidt 1970, 179–83). The contextual and conceptual metamorphoses of the motif thus attest to a mechanism of continuity of these essential thought systems which governed the Central Asian world and beyond.

Yet even when the scientific causes were clear, the mythological interpretation of the phenomenon survives. This syncretism was referred to by Willy Hartner:

"We might suppose that clear insight into the physical causes of eclipses could have thrown mythological tradition into the background. But this has not been the case. What we observe is that mythological and astronomical elements contract an intimate fusion. The nodes of the moon's orbit are simply identified with the eclipse monster itself: with the Hindus, Rāhu becomes the ascending, Ketu the descending node; with Persians and Arabs, the head and tail of the Djawzahr play the same role" (1938, 131).

In Islamic astronomy the Persian *gōčihr* which was called *al-jawzahar* or *al-tinnīn* (also *ažd*a*hā* "the giant dragon"),[19] was sometimes represented as a bi-partite or double-headed dragon. It is the circumpolar constellation Draco, "represented as a very long serpent with many convolutions; it is coiled around the north pole of the ecliptic" (Al-Bīrūnī, *Kitāb al-Tafhīm*, tr. and ed. Wright 1934, 71), which is sometimes metaphorically applied to the Milky Way (MacKenzie 1964, 521–2, n. 53, 525).[20] The *Viṣṇudharmottara Purāṅa* (III.67) describes how the first sacred waist band or girdle (*ayyaṅga* which is closely related to the Iranian *aiwiyaonghen* that is worn by every devout Zoroastrian)

[19] Definition of *al-Jawzahar* in Abū ʿAbd Allāh Muḥammand al-Khwārizmī's *Mafātīḥ al-ʿUlūm*, cited after Hartner 1938, 120.

[20] Cf. *The Mystical and Visionary Treatises of Suhrawardi*, tr. Thackston, 1982, 113, n. 42.

was presented to the sun god by the king of serpents, Vāsuki, and represented the starry band of the Milky Way (Carter 1981, 80 and n. 27).

Together with the acculturation of astronomical knowledge, astrological iconography emerged in the form of visual conceptualisations that were regularly featured in medieval imagery. These were emblematically transferred onto architectural sculpture as well as portable objects, in particular metalwork and ceramics. Astrological considerations also had a profound bearing on the artistic conventions of the iconography of the serpent-dragon. Its representation in medieval Islamic astrology has been addressed in a number of studies, foremost among which remains Hartner's study demonstrating the influence of the conceptualisation of the two "lunar nodes" (*al-ʿuqdatāni*) on Islamic artisans (1938, and *idem*, "Al-Djawzahar or al-Djawzahr," *EI*^{2}; cf. Öney 1969, 193–216; Otto-Dorn 1978–79, 125–36; Azarpay 1978, 363–74).

As seen in sources that pre-date the Islamic period, the crucial aspect of *al-jawzahar* is that it consists of two nodes of the Moon's orbit or "points at which (the) two [great] circles of the sphere intersect,"[21] in other words the two points where the course of the Moon crosses the plane of the ecliptic from south to north: the "head of the dragon" *(ra's al-tinnīn)* is formed by the ascending node of the Moon's orbit, and, correspondingly, the "tail of the dragon" *(dhanab al-tinnīn)* by the descending node (Khareghat 1914, 126–8; MacKenzie 1964, 515). This associates it with both solar and lunar eclipses; the latter were attributed to the occurrence of a conjunction, or opposition, of the Sun and Moon (New Moon or Full Moon, respectively) in or near the lunar nodes.

The significance accorded to the eclipse is reflected in the bipartite "dragon" who was seen as temporarily "devouring" the Sun and the Moon at certain irregular intervals, and then "delivering" them – since the two planets always appear to emerge unscathed from their temporary eclipse by the "dragon." This non-Ptolemaic concept played a prominent role in astrological associations whereby the two nodes were treated as though they were real celestial bodies, in other words extra, albeit invisible "planets," or fictitious nodes (Beck 2004, 161 and n. 29). They were conceived as an eighth and a

[21] Definition of *al-jawzahar* in Abū ʿAbd Allāh Muḥammand al-Khwārizmī's *Mafātīḥ al-ʿUlūm*, cited after Hartner 1938, 120.

ninth planet, the only difference between them and the original seven planets being that contrary to the others their movement was westwards or "retrograde," rather than eastwards (Beck 2004, 161).

The Ghaznavid and Ghūrid campaigns into India resulted not only in the acquisition of extensive booty, but also brought scholars, craftsmen and a variety of artisans into the capital, Ghazna, who brought in turn their own indigenous iconographies, so contributing perhaps to the diffusion of the iconography of *al-jawzahar*. The great scholar Abū Rayḥān Muḥammad ibn Aḥmad al-Bīrūnī, known as "the Master" (*al-Ustādh*), who devoted more than half of his extensive writings to astronomy and astrology, had accompanied sulṭān Maḥmūd ibn Sebuktigin (r. 389/999–421/1030), possibly as official astrologer, on several of his military campaigns to Northwest India (Boilot, "al-Bīrūnī (Bērūnī), Abū ʾl Rayḥān Muḥammad b. Aḥmad," *EI*[2]). Here he got acquainted with Sanskrit and various dialects as well as a wealth of knowledge on early eleventh-century life in India which he elaborates in his *Kitāb Taʾrīkh al-Hind* ("Description of India"), completed upon his return to Ghazna in 421/1030 shortly after the death of Maḥmūd.

In his *Kitāb al-Tafhīm li-awāʾil ṣināʿat al-tanjīm* ("Book of Instruction in the Elements of the Art of Astrology"), which he had written the previous year, al-Bīrūnī refers to the two fictitious nodes, the eighth and a ninth planet, as knot *(ʿuqda)* and point of crossing *(majāz)* (tr. and ed. Wright 1934, 91–2). In spite of his statement that "they are not real planets," the same author does however record the position of the *raʾs al-tinnīn* and the *dhanab al-tinnīn* in the various astrological tables included in his texts (tr. and ed. Wright 1934, 255, 258). Much earlier, in the work *On The Great Conjunctions*, or the *Aḥkām Taḥāwīl Sinī al-Mawālid*, the astrologer Abū Maʿshar (d. 272/886) had already referred to the points of exaltation for the nodes of the Moon which for the dragon's head is in Gemini 3°, and for the tail in Sagittarius 3°.[22]

[22] Hartner (1938, 133 and n. 30) refers to *De magnis coniunctionibus*, the Latin version translated by Johannes Hispalensis, printed at Augsburg in 1489 (repr. Venice 1515), which contains a chapter dealing with the planetary influence of the nodes as a figure of the "dragon" with its head and tail twisted around two nodes (reproduced in *idem*, fig. 10). Cf. al-Bīrūnī's references in his *Kitāb al-Tafhīm*, tr. and ed. Wright 1934, 358.

The "node of the Moon's orbit" however is an integral part of the iconography of the eclipse monster, portrayed as loop or twisted knot, sometimes visualised as a pretzel- or heart-shaped knot. This is reflected in the symbolism of the personification of comets, Ketu, visualised on the *navagraha* reliefs that represent the nine Indian planetary deities, which are similarly illustrated with a human torso and a serpentine tail terminating in a knot.[23] The earliest surviving representation of Rāhu and Ketu in India is carved on a *navagraha* lintel from Uttar Pradesh, dating from *c*. 600 or slightly later, in which Ketu is represented as a half-ophidian figure sitting on his coiled serpentine tail beside the cephalic Rāhu (fig. 1).[24]

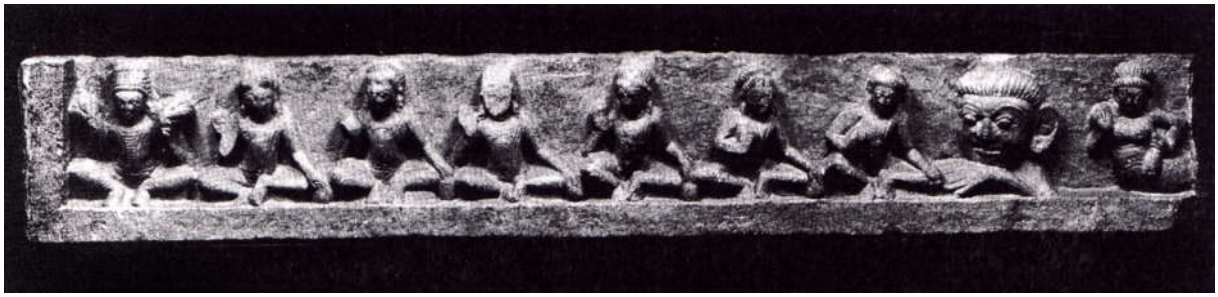

Figure 1

Individual depictions of *jawzahar* – Draco as eighth planet next to the seven traditional planets, comprising the Sun, the Moon, Saturn, Jupiter, Mars, Venus and Mercury,[25] often portray a cross-legged figure holding a serpent-dragon in each hand. The figure is shown to hold either a pair of upright serpent-dragons, their bodies forming a loop,[26] or

[23] Ketu's serpent tail is alluded to in the *Agnipurāṇa*; see De Mallmann 1962, 86.

[24] The earliest western Indian representation is found on a fragmentary lintel from Alwar district in Rajasthan, which probably dates from *c*. 600 to 650 (Markel 1995, fig. 29; Government Museum, Alwar). For later depictions, see also Hartner 1938, 134, 138, figs. 6–8. For a discussion of the *navagraha* reliefs, see Pingree 1964–5, 249–67; Markel 1995, 19–68 and 129–76.

[25] Hartner 1938, 114–138. In later mediaeval Indian literature both nodes, Rāhu, or *ra'ṣ al-tinnīn*, and Ketu, or *ḍanab al-tinnīn*, were attributed the same importance as the other seven planets, hence there were a total of nine planets; Hartner 1938, 133, also 151.

[26] For instance, on a late twelfth or early thirteenth-century copper alloy inkwell, inlaid with silver from Western Central Asia/Eastern Iranian world (Pugachenkova and Rempel' 1982, fig. 196, and fig. 197, line drawing), or on a thirteenth-century silver-inlaid copper alloy candlestick from Mesopotamia (Baer 1983, 256, fig. 208).

vertical staffs (figs. 2–5); the coiling bodies or the allegorical staffs ending in confronted dragonheads with gaping snouts. It is significant that representations of the planet *jawzahar* thereby make use of the emblematic portrayal of the cosmic ruler, framed by dragon-headed staffs, ubiquitously employed on visual art from the mid-eleventh to early thirteenth century and associated with the ancient concept of the "Master of the Dragons." The choice of this cosmic symbolism underlines the prominence accorded to *jawzahar* which gives an indication of the magnitude of the potential effects the planet could have on the course of human events. The conception of the central figure as dragon-tamer thereby perhaps reflects the apparent necessity to harness the forces of this planet.

Figure 2

Figure 3

Figure 4

Figure 5

In the Irano-Turkish territories, the eclipse pseudo-planet *(al-jawzahar)* is often shown at the point of exaltation of its head or tail in Gemini, as for instance on a silver- and copper-inlaid brass ewer from Herat, formerly in the Nuhad Es-Said Collection, now in the National Museum of Qatar (fig. 6). In Islamic tradition, the planetary eclipse in Sagittarius is generally rendered as a centaur taking aim with a bow at its long dragon-headed tail and shooting an arrow into the dragon's mouth. On the Qatar ewer the sign is accordingly portrayed as the protome of a winged quadruped dragon with tongue protruding from the gaping mouth rising from the looped tail (fig. 7).

Figure 6

Figure 7

A sculptural example of the planetary eclipse in Sagittarius is depicted among eight astrological reliefs carved onto the pillars of the Tigris bridge, near the city of Jazīrat ibn ʿUmar (present-day Cizre), Anatolia. Among the reliefs is the upright knotted protome of a dragon with gaping mouth and curled-up snout tip, oriented towards the figure of a centaur shooting with a bow and arrow into its mouth (fig. 8). The bridge was commissioned by the *wazīr* of Mosul, Jamāl al-Dīn Muḥammad al-Iṣfahānī. The *wazīr*'s imprisonment in 558/1163 provides a *terminus ante quem* for the construction of the bridge and its astrological relief sculptures.[27] As pointed out by Hartner, the reliefs are one of the earliest-known sculptural examples "in which the Islamic artist obviously grants the same rights to one or both of these pseudo-planets as to the seven real ones, while in India this had been the rule centuries before" (1938, 132).

Figure 8

[27] Meinecke 1996, 60. On the reliefs of Jazīrat ibn ʿUmar, see Preusser 1911, pl. 40; Hartner 1938, 134 and fig. 2 (photograph at bottom left), and Hartner 1973–4, 108, 110; Gierlichs 1996, pl. 47.4. A comparable figure is represented as centaur-archer shooting an arrow backwards at the dragon head emerging from its tail on the coinage of the Artuqid ruler of Mardin, Nāṣir al-Dīn Artuq Arslan ibn Il Ghāzī (599/1203–637/1239); Roxburgh 2004, 398, cat. 86; *What the Coins Tell Us* 2009, 102; Hauptmann von Gladiss 2006, 107–8, figs. 15, 16. The same emblem also figures on the coinage of the ʿAbbasid caliph al-Nāṣir (577/1181–620/1223); Hauptmann von Gladiss 2006, 107, cat. 15.

Similarly, depictions of *al-jawzahar* menacing the Sun and the Moon, or their respective zodiacal animals, the lion and the crab, became prevalent in the decorative programmes of objects, as evidenced in the depictions on the same ewer (figs. 9 and 10). The importance of the eclipse pseudo-planet is such that most of the roundels on this ewer show the signs of the zodiac and planets inhabited with monster heads with long floppy ears growing from scrolling tendrils that Hartner has identified with "the dragon progeny threatening the luminaries or, vicariously, their *domicilia* and *exaltations*" (1959, 237–9, and *idem* 1973–74, 112, 118). However, he has qualified the astrological interpretation suggesting that "in all probability, various elements – astronomical, astrological and mythological – were here fused in one" (1973–74, 112–3). Hence the astrological veracity of such details was less important than their exemplary significance.

Figure 9

Figure 10

From about the twelfth-century symbolic personifications of Sol and Luna, often shown together with the dragon motif, were widely applied to portable objects, especially on metalwork, from Western Central Asia, especially the greater Khurasan region. By virtue of its very characteristic as an eclipse dragon *al-jawzahar* was directly linked to the Sun and the Moon. The two luminaries are among the representations of the eight planets (the pseudo-planet *jawzahar* is here represented as eighth "planet") on the lid of a covered copper alloy bowl, known as Vaso Vescovali, made in the Khurāsān region at about 1200 (Hartner 1973–74, 119; Ward, 1993, 79). A three-faced Sun, akin to the one featured on the Qatar ewer (fig. 9), surmounts a winged figure that sits on a pointed support and holds up the luminary's "dais", and, in turn, is symmetrically flanked by two confronted attendants behind whom long-eared *jawzahar*-like heads grow out of curling foliage which curves around their waists (fig. 11). The Moon consists of a human figure holding up with its four arms (an image probably informed by Indian prototypes) a large crescent which frames the entire upper body, while squatting on a "dais" supported by quadruped protomes, probably horses. The addorsed attendants are related to those of the Sun but are clad in more angular attire with the *jawzahar*-like

heads growing out of their waists (fig. 12 a and b). Significantly, as Hartner has observed, “the scene has no menacing character” (1973–74, 119).

Figure 11

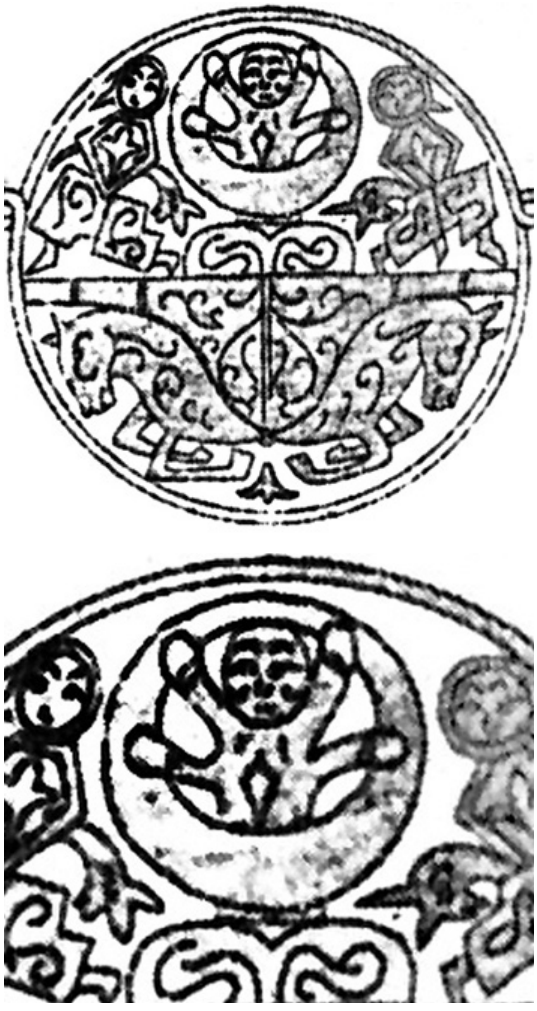

Figure 12 a and b

The personifications of the Sun and the Moon are also featured above a pair of addorsed knotted dragons, serving here as support for the luminaries, as part of a decorative programme on a large copper alloy basin inlaid with silver of the thirteenth-century *atābak* Badr al-Dīn Luʾluʾ (618/1222–657/1259) of Mosul (fig. 13) (Saxl 1912, 164 and fig. 10; Sarre and van Berchem 1907, 22, 27, figs. 1 and 13). The depictions reveal an interest in the translating of entities beyond the domain of humankind, such as the two luminaries, into human guise (Pancaroğlu 2000, 197). The selective visualisation of the Sun and the Moon and the menace posed to them in the form of solar and lunar eclipses, ascribed to *al-jawzahar*, is related to the daily relevance afforded to the two luminaries in human affairs and existence (Pancaroğlu 2000, 204).

Figure 13

While the dragon is mainly associated with the eclipses and, hence, the "devouring of light," its positive aspect as giver of light and, consequently, as protector of light is often more difficult to gauge although references are found in Iranian poetry. The metaphysical aspect of the dragon is evoked in a passage of the fables and anecdotes of the early thirteenth-century *Marzubān-nāma* ("Tales of Marzubān") recorded by Saʿd al-Dīn Warāwīnī in 607–22/1210–25, who presented his collection to Abu 'l-Qāsim Rabīb al-Dīn, the vizier to the Ildenizid/Eldiguzid *atābeg* of Azerbaijan (Ādharbyjān), Ozbek ibn Muḥammad, with the allegorical allusion:

"...at dawn, when the black serpent of night cast the Sun's disc out of the mouth of the East" (tr. Levy 1959, 51)

hence implying a double-headed dragon delivering the luminary and the creation of light.

Reminiscences of ancient cosmogonical notions may be gauged from Armenian lore recorded by the Armenian historian Moses of Chorene (Movsēs Khorenatsi) in his *Patmutʿiwn Hayocʿ* ("History of the Armenians"),[28] relating to the Median king Astyages, the Armenian arch-enemy referred to as Azhi Dahāka/Azhdahāk, the dragon in man-shape (or the human in dragon-shape)[29] of the Sasanian epics, the archetype of evil misrule, whose first wife, Anoysh, was called the "mother of the dragons"(Mahé 1995, 183). Her name, Anoysh, however literally signifies "immortal, luminous, perfumed" (Acaryan, H., *Hayeren armatakan bararan* ("Dictionnaire étymologique arménien"), vol. 1, 206 b (in Armenian), cited by Mahé 1995, 183). Moreover, her association with the monstrous dragon, to whom she gives numerous offspring, recalls certain cosmogonies in which one of the two primordial entities is "infinite light, serene and joyous" and the other "a frightening and dark obscurity, coiled up in twisting spirals akin to those of a serpent" (*Poimandres*, tr. and ed. Nock and Festugière 1946, 7 and 12, n. 9). It is moreover interesting to note that the original meaning of the Sanskrit word *ketu* is "light," "clarity" (synonymous with the etymologically related adjective *citra* of the Pahl. *gōčihr*), which is in apparent contradistinction to the light-devouring function of Ketu as eclipse demon.

[28] The *Patmutʿiwn Hayocʿ* is ostensibly written in the fifth century but probably dated to the mid-eighth century in its present form.

[29] Cf. Schwartz 1980, 123–4. As has been suggested, the mythological character of Azhdahāk may well be older than the Zoroastrian texts which first record his name, since figures of anthropomorphised dragons already appear in Bronze Age Central Asia. See Kuehn 2009, 43–7, and *eadem* 2016, 492–508.

LIST OF ABBREVIATIONS

EI^2 *The Encyclopaedia of Islam*, 2nd edition, 11 vols., Leiden, 1960–2005.

EI^3 *The Encyclopaedia of Islam*, 3rd edition, Leiden, 2012, *Brill Online Reference Works*.

EIr *Encyclopaedia Iranica Online.* Available: http://www.iranica.com/newsite/. Accessed February 2012.

BIBLIOGRAPHY

Allen, James W.

1982 *Islamic Metalwork: The Nuhad Es-Said Collection*, London, repr. 1999.

Azarpay, Guitty

1978 "The Eclipse Dragon on an Arabic Frontispiece Miniature," *Journal of American Oriental Society*, 88.4, 363–74.

Baer, Eva

1983 *Metalwork in Medieval Islamic Art*, Albany, New York.

Beck, Roger

2004 *Beck on Mithraism: Collected Works With New Essays*, Ashgate Contemporary Thinkers on Religion: Collected Works, Ashgate.

al-Bīrūnī, Abū ʾl-Reyḥān Muḥammad ibn Aḥmad

1876–8 *Kitāb al-Āthār al-Bāqiya ʿan al-qurūn al-khāliya*, tr. and ed. Sachau, E.C., *Chronologie orientalischer Volker von Albêrûnî*, Leipzig and London.

1887 *Kitāb fī Taḥqīq mā li-l-Hind min maqūla maqbūla fi-l-ʿaql aw mardhūla*, tr. and ed. Sachau, E.C., *Alberuni's India: An Account of the Religion,*

Philosophy, Literature, Chronology, Astronomy, Customs, Laws and Astrology of India about A.D. 1030, London.

1934 *Kitāb al-Tafhīm li-Awaīʾl Ṣināʿat al-Tanjīm*, tr. and ed. Wright, R.R., *The Book of Instruction in the Elements of the Art of Astrology*, repr. from British Museum Ms. Or. 8349, London.

Carter, Martha L.

1974 "Royal Festal Themes in Sasanian Silverwork and their Central Asian Parallels," *Acta Iranica*, Commemoration Cyrus, vol. 1, Hommage Universel, Tehran, Liege and Leiden,171–202, pls. III–XIV.

Christensen, Arthur

1944 *L' Iran sous les Sassanides*, 2nd ed.,Copenhagen.

Cowell, Edward B.

1895 *The Jataka or Stories of the Buddha's Former Births*, repr. Delhi, 2000.

Duchesne-Guillemin, Jacques

1990 "The Dragon and the Lunar Nodes," *Bulletin of the Asia Institute*, vol. 4, 17–19.

Epstein, Marc Michael

1997 *Dreams of Subversion in Medieval Jewish Art and Literature*, University Park, PA.

Exhibition catalogue

2009 *What the Coins Tell Us: Symbols and Multicultural Aspects in Medieval Anatolian Coins*, 30 September to 31 December 2009, Yapı Kredi Vedat Nedim Tor Museum, Istanbul.

al-Firdawsī, Abu 'l-Qāsim

1838–78 *Shāh-nāma*, tr. and ed. Mohl, J., *Le livre des rois*, 7 vols., Paris.

Gierlichs, Joachim

1996 *Mittelalterliche Tierreliefs in Anatolien und Mesopotamien: Untersuchungen zur figürlichen Baudekoration der Seldschuken, Artuqiden und ihrer Nachfolger bis ins 15. Jahrhundert*, Istanbuler Forschungen 42, Tübingen.

Green, Tamara M.

1992 *The City of the Moon God: Religious Traditions of Harran*, Leiden.

Gutas, Dimitri

1998 *Greek Thought, Arabic Culture: the Graeco-Arabic Translation movement in Baghdad and early society (2nd–4th/8th–10th centuries)*, London.

Hartner, Willy

1938 "Pseudoplanetary Nodes of the Moon's Orbit in Hindu and Islamic Iconographies," *Ars Islamica*, vol. V, 2, Ann Arbor, 114–54.

1959 "Zur astrologischen Symbolik des »Wade Cup«," *Aus der Welt der Islamischen Kunst. Festschrift für E. Kühnel zum 75. Geburtstag*, Berlin, 234–243.

1973–74 "The Vaso Vescovali in the British Museum," *Kunst des Orients*, IX, Heft 1/2, 99–130.

Hauptmann von Gladiss, Almut, ed.

2006 *Die Dschazira: Kulturlandschaft zwischen Euphrat und Tigris*, Berlin.

Henning, Walter Bruno

1942 "An Astronomical Chapter of the Bundahishn," *Journal of the Royal Asiatic Society*, 229–248.

Hermes Trismegistus

1946 *Poimandres, Traites 1–12*, tr. and ed. Nock, A.D., and Festugière, A.J., *Corpus hermeticum* vol. 1, 4, Paris.

Herzfeld, Ernst

1920 "Der Thron des Khosro. Quellenkritische und ikonographische Studien uber Grenzgebiete des Kunstgeschichte des Morgen- und Abendlandes," *Jahrbuch der Preussischen Kunstsammlungen* 41, 1–24, 103–47.

Hoernle, Augustus Frederic Rudolf

1894 "The Weber MSS.—Another Collection of Ancient Manuscripts from Central Asia," *Journal of the Asiatic Society of Bengal* (*JASB*) 62, pt. I, 1893, Calcutta, 1–40.

1893–1912 *The Bower Manuscript. Facsimile Leaves, Nagari Transcript, Romanised Transliteration and English Translation with Notes*, Calcutta.

Janda, Michael

2010 *Die Musik nach dem Chaos: Der Schopfungsmythos der europaischen Vorzeit*, Innsbrucker Beitrage zur Kulturwissenschaft, N.F., Bd. 1, Innsbruck.

Johnston, Edward Hamilton

1936 *Aśvaghoṣa's Buddhacarita or Acts of the Buddha*, Lahore, repr. Delhi, 2004.

Kay Kāwūs ibn Iskandar ibn Qābūs, ʿUnṣur al-Maʿālī

1951 *A Mirror for Princes*, tr. Levy, R., London.

Kennedy, Edward Stewart

1956 *A Survey of Islamic Astronomical Tables*, Transactions of the American Philosophical Society, New Ser., vol. 46, no. 2.

Kennedy, Edward Stewart, and Pingree, David Edwin

1971 *The Astrological History of Mashāʾallāh*, Cambridge,MA.

Khareghat, Muncherji Pestonji

1914 "The Identity of Some Heavenly Bodies mentioned in Old Iranian Writings," *Sir Jamsetjee Jejeebhoy Madressa Jubilee Volume*, ed. Modi, J.J., Bombay, 116–158.

Kuehn, Sara

2009 "On the Role of the Ophidian and the Quadruped Dragon within the Iconography of the Mythological Scheme of the Oxus Civilisation," *On the Track of Uncovering a Civilization. A Volume in Honor of the 80th Anniversary of Victor Sarianidi*, Transactions of the Margiana Archaeological Expedition, Vol. 3, Moscow and St. Petersburg, Aletya, November, 43–7.

2011 *The Dragon in Medieval East Christian and Islamic Art*, Islamic History and Civilization, Studies and Texts 86, Leiden and Boston.

2016 "An Unusual Large Circular Compartmented 'Stamp Seal' of the Goddess with Animals: Some Thoughts on the Religious Symbol System of the Central Asian Bronze Age Culture of Bactria-Margiana," ***in:*** *Transactions of the Margiana Archaeological Expedition: In Memory of Professor Victor Sarianidi* 6, eds N. Dubova, E.V. Antonova, P.M. Kozhin, M.F. Kosarev, R.G. Muradov, R.M. Sataev, A.A. Tishkin, Moscow: Staryi sad, 492–508.

Levi, Sylvain

1915 "Le catalogue géographique des Yakṣa dans la Mahâmâyûrî," *Journal asiatique*, 11ᵉ série, 5, 19–138.

L'Orange, Hans Peter

1953 *Studies on the Iconography of Cosmic Kingship in the Ancient World*, Instituttet for sammenlignende kulturforskning, Serie A: Forelesninger XXIII, Oslo.

Long, Bruce J.

1976 "Life Out of Death: A Structural Analysis of the Myth of the 'Churning of the Ocean of Milk,'" *Hinduism: New Essays in the History of Religion*, ed. Bardwell Smith, L., Supplement to Numen 33, Leiden, 171–207.

MacKenzie, David Neil

1964 "Zoroastrian Astrology in the *Bundahišn*," *Bulletin of the School of Oriental and African Studies* 27, 511–29.

Mahé, Jean-Pierre

1995 "Dragons et serpents dans les traditions arménienne," *Actes du colloque "Les Lusignans et l'OutreMer," 20–4 octobre 1993*, Poitiers, 181–9.

De Mallmann, Marie-Thĕrèse

1962 *Les enseignements iconographiques de l'Agni-purāna*, Annales du Musée Guimet, Bibliothèque d'études 67, Paris.

Markel, Stephen A.

1995 *Origins of the Nine Planetary Deities*, Studies in Asian Thought and Religion, vol. 16, Lewiston, NY.

Meinecke, Michael

1996 *Patterns of stylistic changes in Islamic architecture: local traditions versus migrating artists*, New York and London.

Öney, Gönül

1969 "Anadolu Selçuk sanatlında Ejder Figürleri (Dragon Figures in Anatolian Seljuk Art)," *Belleten* XXXIII, 171–192 (Turkish version), 193–216 (English version and plates).

Otto-Dorn, Katharina

1978–79 "Figural Stone Reliefs on Seljuk Sacred Architecture in Anatolia," *Kunst des Orients* 12, 1–2, 103–149.

Pancaroğlu, Oya

2000 *'A World unto Himself': The Rise of a New Human Image in the Late Seljuq Period (1150–1250)*, Doctoral dissertation, Harvard University.

Pingree, David Edwin

1963 "Astronomy and Astrology in India and Iran," *Isis*, 1963, vol. 54, 229–246.

1968 *The Thousands of Abū Ma'shar*, The Warburg Institute, London.

1970 *Census of the Exact Sciences in Sanskrit*, Series A, vol. 1.

2006 "The Byzantine Translations of Māšāʾallāh on Interrogational Astrology," *The Occult Sciences in Byzantium*, eds., Magdalino, Paul, and Mavroudi, Maria V., Geneva, 231–244.

Preusser, Conrad

1911 *Nordmesopotamische Baudenkmäler altchristlicher und islamischer Zeit*, Leipzig.

Pugachenkova (Pugačenkova), Galina Anatolievna and Rempel', Lazar Izrailevich

1982 *Ocherki iskusstva Sredney Azii*, Moscow.

Roxburgh, David, ed.

2005 *Turks: A Journey of a Thousand Years, 600–1600*, London.

Russell, James R.

2004 *Armenian and Iranian Studies*, Harvard Armenian Texts and Studies 9, Armenian Heritage Press, Cambridge, MA.

Saliba, George

1992 "The Role of the Astrologer in Medieval Islamic Society," *Bulletin d'Études Orientales* 44, 45–67.

Santoro, Arcangela

2006 "On the Two Intertwined Dragons from Pendžikent," *Ērān ud Anērān: Studies Presented to Boris Il'ič Maršak on the Occasion of His 70th Birthday*, eds. Compareti, Matteo, Raffetta, Paola, and Scarcia, Gianroberto, Venice, 543–553.

Sarre, Friedrich and van Berchem, Max

1907 "Das Metalbecken des Atabeks Lulu von Mosul in der Kgl. Bibliothek zu München," *Münchener Jahrbuch der bildenden Kunst*, I, 18–37

Savage-Smith, Emilie

2004 "Introduction," *Magic and Divination in Early Islam*, ed. Savage-Smith, Emilie, Aldershot, xiii–xlviii.

Saxl, Fritz

1912 "Beiträge zu einer Geschichte der Planetendarstellungen im Orient und Okzident," *Der Islam* III, 151–177.

Scherer, Anton

1953 *Gestirnnamen bei den Indogermanischen Völkern*, Heidelberg.

Schwartz, Martin

1980 Mayrhofer, M., Iranisches Personennamenbuch, Band I: Die altiranischen Namen. Faszikel 1: Die avestischen Namen," *Orientalia* vol. 49, n.s., Pontificium Institutum Biblicum, 123–6.

Sezgin, Fuat

1971 *Alchimie-Chemie-Botanik-Agrikultur bis ca.430 H.*, Geschichte des arabischen Schrifttums, vol. 4, Leiden.

Strong, John S.

1992 *Legend and Cult of Upagupta: Sanskrit Buddhism in North India and Southeast Asia*, Princeton.

Suhrawardī, Shihābuddīn Yaḥyā

1982 *The Mystical and Visionary Treatises of Suhrawardi*, tr. Thackston, W. M., London.

al-Thaʿālibī, Abū Manṣūr

1900 *Taʾrīkh Ghurar al-siyar* or *al-Ghurar fī siyar al-mulūk wa ʾl-akhbārihim*, tr. and ed. Zotenberg, H., *Histoire des rois des Perses par Abou Manṣour ʿAbd al-Malik ibn Muḥammad ibn Ismaʿil al-Thaʿalibi*, Paris.

Ullmann, Manfred

1972 *Die Natur- und Geheimwissenschaften im Islam*, Handbuch der Orientalistik I, Ergänzungsband VI, 2, Leiden.

Waldschmidt, Ernst

1970 "Buddha Frees the Disc of the Moon," *Bulletin of the School of Oriental and African Studies* XXXIII, 179–83.

Ward, Rachel

1993 *Islamic Metalwork*, London.

Williams, Joanna Gottfried

1982 *The Art of Gupta India: Empire and Province*, Princeton, NJ.

Zaehner, Robert Charles

1955 *Zurvan: a Zoroastrian Dilemma*, Oxford, repr. New York, 1972.

Zürcher, Erich

1959 *The Buddhist Conquest of China: The Spread and Adaptation of Buddhism in Early Medieval China*, vol. 1, Leiden.

LIST OF ILLUSTRATIONS

Figure 1

Nine planetary deities including Rāhu and Ketu.

Relief carving, Uttar Pradesh. *c.* 600 or slightly later.

Red sandstone. Height 11.4 cm, length 76.2 cm.

Collection of Paul F. Walter; on loan to the Los Angeles County Museum of Art, inv. no. L.93.14.24.

After Markel 1995, fig. 21.

Figure 2

The planet *jawzahar.*

Detail from the "Vaso Vescovali," lidded bowl, possibly Herat.

c. 1200. Copper alloy, silver inlay. Height 21.5 cm.

London, British Museum, inv. no. ME OA 1950.7–25.1.

After Hartner 1973–74, fig. 17.6 (detail of drawing; after Lanci, M., *Trattato delle simboliche rappresentanze arabiche I–III*, Paris 1845–46, pl. III).

Figure 3

"A ruler on a dragon-throne".

Detail from the Bobrinski bucket, possibly Herat.

Muarram 559/December 1163.

By Muḥammad ibn ʿAbd al-Wāid and Masʿūd ibn Amad.

Copper alloy, inlay in silver, copper and niello.

Height to rim 18.5 cm, diameter 22 cm.

St. Petersburg, State Hermitage Museum, inv. no. JR-2268.

Photograph @ State Hermitage Museum, St. Petersburg.

Figure 4

"A ruler on a dragon-throne".

Detail on the base of an inkwell, Western Central Asia.

Late twelfth or early thirteenth century.

Copper alloy, silver inlay.

Formerly in the Minassian Collection, present owner unknown.
After Baer 1981, fig. 3A, and *eadem* 1983, 261, fig. 212a.

Figure 5
"A ruler on a dragon-throne".
Detail on the base of an inkwell, Western Central Asia.
Late twelfth or early thirteenth century.
Copper alloy, silver inlay.
Location unknown.
After Pugachenkova and Rempel' 1982, fig. 196.

Figure 6
Sign of the zodiac featuring the eclipse pseudo-planet *(al-jawzahar)* at the points of exaltation of its head or tail in Gemini.
Detail from the body of a ewer, possibly Herat.
Late twelfth or early thirteenth century.
Copper alloy, inlay in silver, copper and probably niello. Height 44.5 cm.
Formerly in the Nuhad Es-Said Collection, now in the National Museum of Qatar in Doha.
Photograph @ James Allan.

Figure 7
Sign of the zodiac featuring the planetary eclipse in Sagittarius shown as dragon-tailed centaur.
Detail from the body of a ewer, possibly Herat.
Late twelfth or early thirteenth century.
Copper alloy, inlay in silver, copper and probably niello. Height 44.5 cm.
Formerly in the Nuhad Es-Said Collection, now in the National Museum of Qatar in Doha.
Photograph @ James Allan.

Figure 8

Relief carving of the planetary eclipse in Sagittarius with upright knotted protome of a dragon oriented towards the figure of a centaur shooting with a bow and arrow into its mouth.

Pillars of the Tigris bridge, commissioned by the *wazīr* of Mosul, Jamāl al-Dīn Muḥammad al-Ifahānī.

Near the city of Jazīrat ibn ʿUmar (present-day Cizre), Anatolia.

Photograph @ Joachim Gierlichs.

Figure 9

Sign of the zodiac featuring the planetary eclipse *(al-jawzahar)* threatening the Sun in Leo.

Detail from the body of a ewer, possibly Herat.

Late twelfth or early thirteenth century.

Copper alloy, inlay in silver, copper and probably niello.

Height 44.5 cm. Formerly in the Nuhad Es-Said Collection, now in the National Museum of Qatar in Doha.

Photograph @ James Allan.

Figure 10

Sign of the zodiac featuring the planetary eclipse *(al-jawzahar)* threatening the Moon in Cancer

Detail from the body of a ewer, possibly Herat.

Late twelfth or early thirteenth century.

Copper alloy, inlay in silver, copper and probably niello.

Height 44.5 cm. Formerly in the Nuhad Es-Said Collection, now in the National Museum of Qatar in Doha.

Photograph @ James Allan.

Figure 11

Sign of the zodiac featuring the Sun.

Detail from the "Vaso Vescovali," lidded bowl, possibly Herat.

c. 1200. Copper alloy, silver inlay. Height 21.5 cm.

London, British Museum, inv. no. ME OA 1950.7–25.1.

After Hartner 1973–74, fig. 17.1 and 17.2 (detail of drawing; after Lanci, M., *Trattato delle simboliche rappresentanze arabiche* I–III, Paris 1845–46, pl. III).

Figure 12 a and b

Sign of the zodiac featuring the Moon.

Detail from the "Vaso Vescovali," lidded bowl, possibly Herat.

c. 1200. Copper alloy, silver inlay. Height 21.5 cm.

London, British Museum, inv. no. ME OA 1950.7–25.1.

After Hartner 1973–74, fig. 17.1 and 17.2 (detail of drawing; after Lanci, M., *Trattato delle simboliche rappresentanze arabiche* I–III, Paris 1845–46, pl. III).

Figure 13

Sol and Luna above a pair of addorsed winged *regardant* dragons.

Detail from a basin of the *atābeg* Badr al-Dīn Luʾluʾ, Mosul.

618/1222–657/1259. Copper alloy, silver inlay.

Munich, Bayerische Staatsbibliothek.

After Saxl 1912, 164, fig. 10 (line drawing).