

CHAPTER 14

Cosmologies and Astrology

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Zoroastrian texts present the world as a positive creation, and already in the earliest Zoroastrian framework (Y 30.4) ‘life’ (Av. *gaiia-*) was opposed to the ‘impossibility of life’ (*ajiiāiti-*). It is Ahura Mazdā who established the cosmic order, from which all the fundamental pillars of the universe and the basic means for natural existence derive, as we deduce from the rhetorical questions put forth by Zarathustra to Ahura Mazdā himself in Y 44. According to this source, Ahura Mazdā’s cosmological actions were the following: *dā-* ‘to create, fix’, *dar-* ‘to support’ (with reference to heaven), while he was also called *huuāpah-* ‘artificer’. A^huramazdā is the god (*baga-*) who, according to the Old Persian inscriptions (6th–4th centuries BCE), created (*adā*) heaven and earth, man, but also happiness for him. It is improbable that Ahura Mazdā was conceived as a divinity who had created the world from “nothing” as in a kind of *creatio ex nihilo*. Rather, he put in order the whole universe, establishing a general harmony in a primordial state. As also in the case of some Vedic gods, he operated with a primeval stock, a kind of basic “substance,” in a still latent phase between cosmic order and disorder. Unfortunately, a full description of the earliest phases of the creation is not attested in Avestan mythological sources, but only in later texts. Thus, we cannot assume that the oldest cosmology exactly followed the same patterns presented by a number of Pahlavi texts such as the *Bundahišn*, etc. In particular, this book of the 9th century CE offers a complete description and explanation for the origin and meaning of existence. It is therefore necessary to compare all the extant data in Avestan and Pahlavi (and in other languages as well), but without assuming a priori that the latest doctrines merely followed exactly earlier traditions without inner evolutions or contradictions. Furthermore, although the extant sources have given room for many different interpretations, the following paragraphs will offer an essential guide to the main Mazdean cosmological doctrines along their historical evolution. Subjects concerning astral mythology and Sasanian astrology will be also discussed in the framework of their cosmological relevance in Zoroastrianism.

The Cosmic Fight and the Double Dimension of Existence and of Creation

According to the Gathic sources, two Mainiius, presented as twins, one called Spənta, 'beneficent', the other Aṇgra (OAv., Aṇra in YAv.), i.e., 'bad', made a 'choice' (*var-*), the first for *aša-* (Ved. *ṛtá-*) 'the order, the right', the latter for *druj-* 'the lie, the disorder' (Ved. *druh-*). These twins thus behave as two mental powers (*mainiiu-*, from the root *man-* 'to think') and represent the model of the fundamental alternative between life and death (or 'impossibility of life'; Y 30.4: *gaiia-* vs. *ajiiāiti-*). Ahura Mazdā, 'Lord Wisdom', whose relations with the two Mainiius are unclear (maybe he is their father, but this conclusion is based only on an inference deduced from a difficult passage such as Y 47.3), is not only the supreme divinity, but also the father of *aša-* (Y 47.2: *huuō ptā ašahiiā mazdā* 'Mazdā is the father of *aša-*'). The primordial choice assumed by both Mainiius determined a number of consequences concerning human and earthly existence, where the fight between these opposite forces becomes manifest, while Ahura Mazdā remains on a higher level, not directly involved in the conflict. Differently, in the later Avestan corpus, it is Ahura Mazdā that progressively covers part of the functions played by Spənta Mainiiu (as a twin of the antagonist in the *Gāthās*), while now he directly faces Aṇra Mainiiu. The later antagonism between Ahura Mazdā and Aṇra Mainiiu (Pahl. Ohrmazd and Ahreman), whose opposite behaviors are no longer presented in connection with a deliberate choice, but as due to their own natures, reflects a new synthesis and is one of the most important aspects of the post-Gathic Zoroastrian radical dualism. Such a pattern is very different from apparently similar doctrines attested in the Gnostic and the Manichaean frameworks. In the Mazdean tradition, in fact, the physical or corporeal dimension is never considered as negative, and there is no opposition between spirit and matter. On the contrary, these two aspects of 'existence' (Av. *ahu-*, m.) are considered in the whole Zoroastrian tradition complementary and, in principle, both as positive (Gnoli 1962, 1963; Shaked 1971). The first, the "mental one" (and not only strictly "celestial"), is described in OAv. as *manahiiā-* or *manahjō* 'of the thought', in YAv. as *mainiiauuā-*, in Pahl. as *mēnōg* (all from a verbal root *man-* 'to think', present in Avestan stem *man-ah-* 'thought', as act or result of thinking, but also in *ma'n-iiu-* 'thought/intention', then, 'spirit', but as a free activity of the mind producing thought, which is personified in the two antagonist twins, both called *mainiiu-*). The second aspect of existence is the "living" one, representing the physical dimension in its seminal form, earlier named in OAv. *astuuant-* 'having bones', but later referred to with the adj. *gaēiθiiā-*, f., 'living', a stem built on *gaēθā-*, f., 'creature, beast(s), ensemble of living beings', and ultimately derived from the verbal root *jī-* 'to live' (Av. *gaiia-*, m., 'life', *ajiiāiti-*, f., 'non-life', *jiiātu-*, m., 'subsistence'), and attested in Pahlavi literature as *gētīg*.

While Ahura Mazdā (with his creatures) and Aṇgra Mainiiu (with his *daēuuas* and the other demoniac beings) share the dimension of the "mental" state or existence, whereas the "living" state, in its positive, seminal, qualities belongs exclusively to the good Creator. Life, in fact, is completely extraneous to the evil forces, because they represent an absolute negativity, the 'impossibility of life' (*ajiiāiti-*), and are in direct antagonism with the idea itself of life (*gaiia-*). For this reason, the evil principle is weaker on the level of the living dimension, because he is not seminal, and behaves as a bringer of

death, so representing an active negation of existence, whose target is the complete destruction of the living world. For these reasons Pahlavi sources affirm that Ahreman does not properly exist in the *gētīg* dimension (Schmidt 1996), and the *GBd* 1, states that, while Ohrmazd, his space, religion, and time ‘were, are and ever shall be’ (*būd ud ast ud hamē bawēd*), in reality Ahreman ‘(was), is, yet will not be’ (<*būd*> *ud ast kē nē bawēd*; Zaehner 1972: 278, 287, 312). Thus, Aṇra Mainiiu is ontologically extraneous to the world and the creation (Bianchi 1958: 24). Consequently the presence of death and any negative aspects of human existence do not depend on Ahura Mazdā’s creation, which was originally perfect, but is a consequence of an extra-cosmic attack produced by Aṇra Mainiiu, whose negative actions operate essentially on the mental level, although they can corrupt the living world and interfere with it.

The invasion and pollution produced by demons is represented in Pahlavi sources as the period of the ‘mixture’ (*gumēzišn*) between the positive and negative forces. Then, the suffering present in the physical world does not derive from Ohrmazd’s inefficiency, but is again the fruit of an extraneous force, stemming from a negative cosmic principle, *druj*-, and enacted throughout the wrong choice by Aṇra Mainiiu and his followers, the *daēuuas*. While Ahura Mazdā, in YAv. sources, is called *dāman*- ‘creator, organizer’, Aṇra Mainiiu is only *duždāman*-, i.e., ‘a bad, evil organizer’; his fabrications have been only sharpened/miscreated against those realized by Ahura Mazdā, and not for an autonomous creative aim. This is the case of the evil ‘contra-fabrications’ (*paitiāra*-), which the Evil Spirit fashioned (*frākərəntat*) on the earth, according to the first chapter of the *Vīdēvdād*, in order to oppose the good works of Ahura Mazdā (Gnoli 1963) who made the sixteen regions where the Aryans live. Although, in Y 57.17, the two Mainiius, ‘the beneficent (*spənta*-) and the bad one (*aṇra*-), apparently arranged (two?) creations’ (*mainiiu dāman daiḡtəm yasca spəntō mainiiuš yasca aṇrō*), this statement is not in contradiction with the asymmetrical function of both protagonists of the myth, because the activities attributed to the two primordial Mainiius refer to directly opposite “creations,” which are, in their inner quality, very different: one is seminal and living, the other mortiferous (Shaked 1967).

According to the *DD* 64, Ohrmazd generated a ‘form of fire’ (*āsrō-kirb*), which seems to be associated with god himself, from the ‘light without beginning’ (*asar rošnīh*; YAv. *anayra raocā*); Gnoli 1962: 117–118). In its turn, *GBd* 1.44 (Gnoli 1962: 117–118; Cereti and MacKenzie 2003: 38), shows that Ohrmazd fashioned forth the form of his creatures from his own essence, from the ‘material light’ (*gētīg rōšnīh*), in a ‘form of fire’ (*Ohrmazd az ān ī xwēš xwadīh, az gētīg rōšnīh, kirb ī dāmān ī xwēš frāz brēhēnīd pad ātaxš kirb*); contrariwise, Ahreman (*GBd* 1.47) sharpened his creation from the material darkness, which is his own essence (*gannāg mēnōg az gētīg tāriḡh ān ī xwēš-tan dām frāz kīrrēnīd*). The qualitative difference of their creations is expressed by means of two different verbs: Ohrmazd *frāz brēhēnīd* ‘fashioned forth’, Ahreman *frāz kīrrēnīd* ‘sharpened, miscreated’, where *kīrrēnīdān*, originally meaning ‘to cut’, is strictly daēvic (see Lincoln 1997, where the semantics of the verbs connected to the operative divine or demoniac actions is discussed). Already in Avestan, the use of a double terminology in order to distinguish good and evil actions, as well as positive or negative creatures, animals, or parts of the body (e.g., *sāra*-, m. ‘head’ [good, or Ahuric], *kamərəda*-, n., ‘head (of a demon)’ [evil, or daēvic], etc.), was current. Such a tradition continued also

in Pahlavi. The dark *gētīg* (*gētīg tāīgīh*), although such a terminology seems contradictory, because a positive concept such as *gētīg* is directly called 'dark' (Shaked 1967: 232–233), probably tries to define the negative primordial essence of Ahreman, just as, if we would use modern terms, a kind of anti-matter, aspermatic and poisonous.

Unlimited and Limited Time

In the framework of the Zoroastrian cosmology, speculations about time have assumed a remarkable development. Starting from the later Avestan sources we find a basic distinction between a 'time without origin (or borders)', Av. *zruuan- akarana-* (in Pahl. *zurwān* [or *zamān*] *ī akanārag*) and a 'time with a long dominion', Av. *zruuan darəyō. xʷadāta* (Pahl. *zurwān* [or *zamān*] *ī dagrand-xwadāy* or again *zamān ī kanāragōmand* 'finite time', *zamān ī brīn* 'limited time'; Zaehner 1972: 106–111). But, if in the later *Avesta* these two forms of time, already divinized, are of minor importance, both gained a first rank position in the Sasanian and post-Sasanian theological speculations, although some earlier doctrines have been recently posited. As Kellens (2001a) has explained, commenting on some difficult passages from the *Tištār* (Yt 8.11) and the *Mihr Yašt* (Yt 10.55 and 74), it is evident that Ahura Mazdā was thought of as permanently staying in infinite time, which is *akarana-* 'without borders'. On the contrary, in certain moments, gods like Tištriia, the star Sirius, or Mithra, can get out from their eternal conditions in order to play an active role in the limited time of the mixed world (Pahl. *gumēzišn*, lit. 'mixture'). This means that the later sources in Pahlavi, distinguishing between infinite and limited time, follow an earlier scheme. The location of Ahura Mazdā in the infinite dimension, confirmed in Pahlavi literature, shows his superiority with respect to his antagonist, who, after entering the good creation, will be imprisoned not only in its physical reality, but also in limited time, while Ohrmazd will control the fight from an external position, appearing on the earth only for the final battle against Ahreman (Panaino 1999b, 2003).

According to the first chapters of the *Bundahišn*, the fight between Ohrmazd and Ahreman takes place in the framework of a cosmic cycle of 12,000 years (Panaino 1998: 163–164). Time is there presented as a divine instrument distinguished from the eternity and the infinite. Ohrmazd, thanks to his absolute 'omniscience and goodness' (*harwispa- āgāhūh ud wēhīh*), at the moment in which he realized the existence of the opposite principle, i.e., Ahreman, decided to interrupt "infinite time." This was a sort of preventive action in order to avoid any *direct* conflict with his antagonist. Otherwise, if a primordial battle suddenly occurred without any stable precondition, it would have been never-ending, because played out in infinite space and time, so without physical and temporal limits. Thus, the cosmic war would have been eternal and any definitive solution would be impossible. The enactment of limited time begins before that of the creation of the universe and of the human world. The introduction of limited time, then, was an autonomous operation decided by Ohrmazd after he had perceived the need of a radical conflict against Ahreman. From this point of view, that "time" was not yet the "historical" one, but it represented its essential precondition. In fact, the duel between the two primordial forces does not start with the direct confrontation between the two highest spirits, but already with the

interruption of infinite time and with the introduction of the earliest phase of creation, which covers the first 3,000 years of the *mēnōg* state. Only because of a new event, according to the Pahlavi sources (particularly the first chapter of the *Bundahišn*), will the rules of the struggle be defined. Ahreman, who parlayed with Ohrmazd, was asked to take part in the good creation, making peace with Ohrmazd, but, because of his innate ignorance and 'post-knowledge' (*pas-danišn*), the Evil Spirit was not able to understand the honesty of the proposal. He thought that Ohrmazd's attempt to obtain a peaceful agreement with him was only a manifestation of fear and weakness. Thus, Ahreman declared his desire for the destruction of the good creation. This answer was expected by Ohrmazd. Thanks to his a priori knowledge he prepared a trap for Ahreman in advance. Ohrmazd, in fact, suggested that the battle should be fought – as it would have been done by two warriors meeting for a duel – in a fixed time and in an established place. The time of the cosmic duel will be that of the cycle of 9,000 years (plus 3,000 in which Ohrmazd had already prepared the preconditions for the meeting with Ahreman, in order to get him into the trap), while the place was that of the world created by Ohrmazd. Ahreman did not see the risks hidden behind such a proposal and accepted it, so the trap was closed. In this way the antagonist is compelled to fight in the limits of finite time and in the space of the *gētīg* creation, where he will be completely destroyed at the conclusion of limited time. Just after this agreement, Ahreman falls asleep for a period of 3,000 years thanks to a prayer, called *Ahunwar* (Y 27.13), pronounced by Ohrmazd himself. During this second period, the divine 'creation' (*bundahišn*) was enacted in its 'living' (*gētīg*) form, but in a state of immobility, which has been described by Molé (1959: 443; 1963) as the *gētīg* in the *mēnōg*, comparable with the Platonic representation of the "kingdom of the ideas." With the conclusion of this second phase of 3,000 years, the first half of the Mazdean cosmic cycle of 12,000 years also ends, while a second one starts, that of the *gētīg* state (for another 6,000 years). It is at this moment, between the end of the *mēnōg* and the beginning of the *gētīg* period, that Ahreman is finally woken up by the demoness *Ĵeh*, the primordial prostitute. The Evil Spirit attacks the creation, piercing the celestial vault enveloping the world and the earth from the northern side (which, in the Zoroastrian cosmology, belongs to the demons). With this invasion the *gētīg* state of limited time definitively begins and becomes visible, because only after Ahreman's invasion were the astral bodies put in motion, revolving along their own orbits. Furthermore, the stars close and obstruct the hole produced in the heaven by Ahreman, so imprisoning all the demons in creation and in time. Thus, although the corruption of the good creation seems to be a victory, Ahreman has to fight in an inferior position, because he does not possess any real creative power in the framework of the *gētīg* dimension, extraneous to his ipseity, and then becomes prisoner of the space-temporal dimension of the cosmos created by Ohrmazd. From this very moment, according to the Zoroastrian cosmology, another 6,000 years of the *gētīg* state will remain until the final destruction of Ahreman. The first 3,000 years of the *gētīg* end with the revelation of the Mazdean faith to Zoroaster, while the final period of 3,000 years will be characterized, at the end of each millennium, by the birth of one of the three sons of Zoroaster. They will announce the liberation from the darkness, and, with the birth of the third son, the Revitalizer par excellence, the *Sōšāns* (Av. *saošiiant*), the destruction of Ahreman will be definitively realized. Only at that moment, with the final descent of Ohrmazd in the fight and his complete triumph, will limited time elapse and the infinite be re-established.

We can resume the cosmological scheme: a sort of cosmic period of 12,000 years presents each millennium under the protection of a zodiacal constellation. This cycle is divided in two sub-periods of 6,000 years each: the first phase is the *mēnōg*, the second one the *gētīg*. Both phases can be divided again into two periods of 3,000 years each. Side by side with this scheme based on four periods of 3,000 years, there is also another simpler pattern, which considers just three moments: 1) the phase before the battle, i.e., that of the primordial creation (*bundahišn*); 2) the phase of the mixture and of the fight with the demons (*gumēzišn*); 3) the final period, named in Pahlavi *fraš(a)gird* (from Av. *frašō.karāti*-, f., lit. 'the act of making splendid [the existence]'), or the final "renovation" of the world, which comes back to its original state of perfection but without the impending presence of Ahreman and all the attendant aspects of evil – death, aging, suffering, etc.

Another version of the cosmic events has been transmitted by Christian Armenian (Eznik of Kolb and Eliše Vardapet) and Syriac (Theodore bar Kōnay and Yohannān bar Penkayē) authors (Zaehner 1972: 419–429, 447–440). The supreme god of time, Zurwān, desiring a son, performed a sacrifice lasting 1,000 years. At its conclusion, Zurwān doubted the efficacy of his ritual performance. Consequently, Ohrmazd was generated from the sacrifice, Ahreman from the doubt. Notwithstanding some apparently pessimistic trends, Zurvanite cosmology too assumed the final destruction of Ahreman as a certain result. Also, in this case, time maintained its linear dimension, where the evil principle is only an accident to be overcome and destroyed through the living superiority of the creation. A certain influence from the Mesopotamian world on the different Iranian speculations about the power of time cannot be excluded, but the Indian doctrines about *Kāla* 'time' and the Greek traditions regarding *Αἰών* ('infinite time') deserve a comparative evaluation as well. (For Zurwān, see also Vevaina, "Theologies and Hermeneutics," this volume.)

The already described elaboration of a cosmic period lasting 12,000 years, divided into two great equal sub-periods, clearly presents some astrological implications. Although each of these twelve millennia was dominated by a zodiacal constellation (as clearly stated in a later New Persian source such as the '*Olamā'-ye Eslām*'; Zaehner 1972: 410–411), it is in the period *gētīg*, from the 7th millennium onwards, after Ahreman's irruption, that the whole celestial sphere is put in motion. With the beginning of the *gumēzišn*, the 'domination' (*hazārag xwadāyīh*) of the new millennium passed to the Balance (*GBd* 5B.15–17), a sign representing the most significant point of astrological depression for the Sun (and, then, for Ohrmazd's forces), but also Saturn's place of exaltation. Thus, *Kēwān* (Saturn), the most dangerous of the planetary demons, became the lord of that millennium (Panaino 1996a), and after thirty years determined the death of Gayōmard, the first man.

The exact date for the introduction of this millenary period cannot be precisely determined, but it should be reasonably old, because already in an Av. fragment embedded in the Pahlavi commentary to *Vd* 2.19, the millennium of Yima was mentioned. Also the *Drwāsp Yašt* (*Yt* 9.10) clearly refers to a period of 1,000 winters (*hazayrō.zima*-; Panaino 2004c). Some early Greek sources dating the birth of Zoroaster 6,000 years before Xerxes' crossing the river Hellespont (480 BCE; Xanthus of Lydia, quoted by Diogenes Laertius) or before Plato's death (347 BCE; Pliny the Elder, *Naturalis*

Historia XXX, 1, with reference to Eudoxus of Cnidus), could be interpreted – although the matter is debated – as a reference to the creation of his pre-existing soul or *frauuuāši-* in the *mēnōg* state, and consequently as another witness of the existence of these two great cosmic periods (Gnoli 2000: 43–94). From all these data we can at least deduce that a millennial doctrine was already known in the period in which Younger Avestan texts were composed and, although no explicit reference to the twelve millennia (but only to single millennia) is attested in these sources, it is presumable that an earlier mythic chronology followed the same pattern of the Pahlavi texts. It probably took its model of inspiration from the division of the ecliptic in twelve zodiacal constellations, easily connected to each millennium (thus corresponding to a cosmic month). Such an interpretation of the data does not necessarily imply that the original doctrine was of an astrological nature, because Classical astrology was not yet practiced at the time of composition of the Avestan sources already mentioned (see below). Moreover, it reflected a speculative equation between a cosmic year divided into twelve months (each one of 1,000 years) and the basic calendrical pattern of twelve months, already attested in the Old Persian, and later also in the Zoroastrian, calendars. Only in late antiquity was this doctrine fully adapted to the astrological framework, although with a number of innovations and additions (Panaino 2004a).

Human history is the history of the ‘mixture’, of the suffering produced by Ahreman’s invasion. The fight in this time is a basic necessity in order to destroy Ahreman and rid him, his minions, and their effects from the universe. Actually, as Shaked (1971: 72) has underlined, “*Gētīg* is the place where the existence of Ahreman can be ontologically denied, and where the outcome of the battle can be foreseen with confidence, despite the fear which the apparent equality of powers arouses.” It is, in fact, in the soul of human beings that the most important struggle for the complete salvation of the world has to be played. The target of history is, at the same time, history’s end, the liberation from the dialectic of the struggle between good and evil, the re-establishment of infinite time, where humanity will spend its life in the *tan ī pasēn*, the ‘future body’ or *corpus resurrectionis*, which will not abolish the *gētīg* existence, but will promote it into an archetypal and ideal state. Although Pahlavi sources describe a paradise (*garōdmān*) and a hell (*dušox*), the last, although full of suffering, is not eternal. It is attested also as a sort of intermediate purgatory (*hammistagān*), where only the persons whose sins and good actions have been evaluated as equal will be temporarily sent. But, with the final apocatastasis or restoration, produced by the last Sōšyāns, all the human beings, good or evil, will physically resurrect and will be admitted to the final salvation and the happiness of paradise.

The Organization of the World and the Place of the Iranians in the Mazdean Cosmography

Heaven

Although an earlier simple distinction between heaven and earth, both fashioned by Ahura Mazdā, is frequently attested in Avestan sources and in the Old Persian inscriptions as well, ‘heaven’ (*asman-*, m.) was considered as divided in various levels, the first

three belonging, in ascending order, to the stars, the moon, and the sun, while in the fourth, attributed to the 'lights without beginning' (*raocā anayra*), the paradise of Ahura Mazdā was located. This subdivision has been linked to the three following steps, correlated with one's thoughts, words, and deeds, which the soul of any dead person should make after the final judgment. The attested order is of a religious nature, because it marks the increasing brightness seen during the ascent to paradise (Duchesne-Guillemin 1962a: 201 = 1978: 12, 1966: 424–425), although it is astronomically inconsistent, because the stars are patently farther from earth than the moon and the sun. The origin of this tradition is a matter of debate, but it is necessary to note that some Babylonian mystical texts from the beginning of the 1st millennium BCE adopted a celestial model with three different superimposed heavens, each one made of a precious stone, locating the stars in the lowest one. A possible influence of the Iranian sequence (stars, moon, sun) on that of some pre-Socratic Greek philosophers like Anaximander of Miletus (6th century BCE), but also Metrodorus of Chios (4th century BCE), a disciple of Democritus, and Crates (presumably the Theban Cynic; 4th–3rd century BCE) has been suggested and deserves serious consideration (Burkert 1963; West 1971: 91; Panaino 1995b).

Avestan cosmogony is already described in Y 44 (Panaino 2007a), where Ahura Mazdā is presented as the supreme god who fixed the course of the sun and of the stars, and through whom the moon waxes and wanes (Y 44.3), who upheld the earth below and the 'nimbus' (*nabah-*, n.) above (i.e., the heavens) from falling (Y 44.4), through whom dawn, midday, and night were fixed, and who also arranged the lights and the darkness (Y 44.5). It is to be noted that neither the stem *diiu-* (of IE origin) nor *asman-* are attested in OAv. sources; they appear only in Younger Avestan texts, although *diiu-*, m. (*hapax*), is only a linguistic fossil used here in the fixed expression *diiāōš patat* '(Aṅra Mainiiu) fell down from the sky' (Yt 3.13). Probably the Iranians, as the Greeks, preserved the image of the heaven as made of stone (Av. *asman-*, in fact, means both 'stone' and 'heaven', and it is etymologically connected with Greek *ἄκμων* 'meteoric stone, thunderbolt, anvil' – while the Greek god Ouranos is sometimes called Akmonides, or son of Akmon – and with Ved. *ásman-*, m., meaning 'stone, rock, sling-stone, thunderbolt'; Bartholomae 1904: 207–208, sub *asan-*, m.; Reichelt 1913; Lazzeroni 1973; Crevatin 1974, 1975, 1976–1977). An Avestan word for 'firmament' was *tβāša-*, n. (Bartholomae 1904: 797–798; Pahl. *spāš*), from OIr. **twarda-* (Ved. *tvar-* 'to hurry'), meaning 'he who hurries'. This was probably a divinity of Mithra's entourage, three times mentioned with Zruuan in the Avestan framework (Zaehner 1972: 89). In the *Rašn Yašt*, we find a description of the celestial travel made by Rašnu throughout the seven continents of the earth or *karšuuars* (see below) and the various constellations and stars in order to reach the paradise of Ahura Mazdā. We also find a reference to the circular movement of the stars, moon, and sun turning around the peak of mount Haraitī (Yt 12.25), which plays the role of the cosmic *axis mundi*. It is also possible that from Indo-Iranian times *Sárasvatī* and *Arəduuī Sūrā Anāhitā* (Witzel 1984; compare Lommel 1954), were associated with the Milky Way, but, if so, such a link was no longer operative in the later Mazdean context, when *Anāhitā/Anāhīd* was connected with the planet Venus (see below).

Earth

The world was conceived as round (but not spherical) and divided into seven large regions, called in Avestan *karšuuar-/karšuuān-* (Pahl. *kišwar*). The most important one, corresponding to X^vaniraθa and to the ancestral 'homeland of the Aryans' (*Airiiānqm vaējah-*), was the central one; there, the Vourukaša Sea, the central mountain, Us.həṇḍauua-, in connection with another one called *Harā-* ('watch-post') or *Haraitī-* (*barəz/bəraz-* or *bərazaitī-*, i.e., 'high') were located. Such a model is similar to the Hindu and Buddhist ones, where the world is divided in seven *dvīpas* with Mount Meru (or Sumeru) at the center of the region Jambūdvīpa (Kirfel 1920: 18*–19*, 29–30*, 112; Gnoli 1985: 15–30). This mythic geography is probably of common Indo-Iranian origin. According to the *Anthologies of Zādspram* (WZ 3.31) (Gignoux and Tafazzoli 1993: 46–47), a Pahlavi text of the 9th century CE, Mount Harburz (i.e., Av. *harā bərazaitī*) rose increasing in its height for a period of 800 years, while the other mountains continued to ascend only for 600 years. During the first 200 years of this entire timespan Harburz reached the sphere of the stars, while another 200 years were necessary to touch that of the moon, another 200 to reach the sphere of the sun, and, finally, in the last 200 the top of this mountain was connected to the summit of heaven. Another common Indo-Iranian heritage can be seen in the similar location of the Vourukaša Sea of a mythical tree, at the south of X^vaniraθa, and that of the Jambū tree, exactly at the south of Mount Meru in Indian cosmography (Boyce 1975a: 132–141). Such a mythical center of the world is frequently associated with a mountainous region and its main river Varj^vhī Dāitiā (Pahl. *weh dāitī*). In this geographical framework the earliest mythical cycles are located (Boyce 1975a: 132–141), as in the case of the 'unicreated Bull' (Av. *gav-aēuuō.dāta-*, Pahl. *gāw ī ēw-dād*) and Gayōmard. The story of one of the most remarkable Indo-Iranian mythical heroes, Av. *Yima* (Ved. *Yama*), takes place in this region, and his *vara-*, the enclosure where he escapes with part of humanity after the arrival of the winters, is there (Malandra 1983: 178).

An early (i.e., post-Indo-Iranian) Iranian development concerns the importance attributed to the *Airiiānqm Vaējah* or 'the space of the Aryans' (Pahl. *Ērānwēz*), not simply considered as the homeland of the Aryans, but of Zoroaster and his revelation (Gnoli 1987: 47). Close to Mount Harā, frequently named also *Hukairiia* 'having good works', there is the Činuuad Bridge (Av. *cinuuatō pərātu-*), through which the souls of the dead ascend to paradise or hell (Boyce 1985: 812). One side of it is connected with the mountain Čagād ī dāidīg, the other to the Harborz (Alborz) chain (*DD* 20.2, Jaafari-Dehaghi 1998: 76–77), probably, as stated by Mary Boyce (1985), in the north, because the bridge must pass through the mouths of hell (*Dk* 9.20.3; *AWN* 53.1). The Iranian innovation concerning the central location of the Airiiana Vaējah, in connection with the central continent and Mount Harā was developed in the Manichaean tradition, where the *Aryān-waižan* was considered the region governed by Wištāsp (the first Iranian lord to accept Zoroaster's religion), located at the foot-steps of Mount Meru or Sumeru (Henning 1943). Another link between the 'peak' (Av. *taēra-*) of Harā and Sumeru is attested in the Khotanese Buddhist sources, which give Sumeru a clearly Iranian appellation (Khot. *ttaira haraysā*; Bailey 1961: 12,

1979: 467). In the Avestan hymn to Mithra (Yt 10.13–15), it is attested in a list of the territorial areas covered by the Aryans (*airiio.šaiiana-*). Mithra flies from Mount Harā passing over all these lands, preceding the movement of the Sun, and comes back to its summit (Gershevitch 1967: 39–40, 78–81, 171–176), which is described as a paradisiacal place (Yt 10.50; Gershevitch 1967: 99–102). The waters of the river Arəduuī Sūrā Anāhitā descend from this peak to the Vourukaša Sea (Yt 5.3; compare Lommel 1927: 32; Bd 10.5–6; Pakzad 2005: 140–141), the most important source of waters and rains for the Aryans. The primordial Iranian heroes who worship Anāhitā sacrifice at the footsteps of the Hukairiia (Yt 5.96; Gnoli 1989: 48). The Avestan space is strongly connected with the Hindukuš (Av. *Upāiri.saēna-*), the Sīstān basin, and probably also the Pamir region, although already in the Sasanian period the mythic horizon was clearly transposed to the western lands, probably because of the centrality played by the new royal dynasty and its church in Fārs (Gnoli 1967: 115–116). This explains why the name Alborz presently refers to the whole chain of mountains from Armenia to the Hindukuš (Eilers 1985). Already in Yt 19.1, from the high Harā, the first mountain listed in this source, a magnificent ring of mountains embraces western and eastern lands. Such a description of the space corresponds to the Indian *lōkālōka-*, which denominates a mountainous ring encircling the regions of the world (Boyce 1985: 811–812). According to Yt 19.7, the total number of mountains was 2,240 (Hintze 1994: 89–90; Humbach and Ichaporia 1998: 28, 80). Their creation was probably enacted by Ahura Mazdā himself (Yt 19.2; Hintze 1994: 71–73; Humbach and Ichaporia 1998: 27, 66), and their function is that of sustaining the priests, the warriors, and the herdsman (Yt 19.8; Hintze 1994: 90–92; Humbach and Ichaporia 1998: 29, 98). Avestan mountains are strictly connected with the *xʷarənah-* ‘the light of glory, fortune, etc.’, and in fact it is not by chance that the first part of Yt 19, which was dedicated to it, opens with the most important Old Iranian source concerning the mountains. The germinal force of the *xʷarənah-* (Gnoli 1982: 253–254), works also inside the earth and must be connected with the strength which produced the elevation of the mountains toward the heaven. The *Bundahišn* (6C.1; Pakzad 2005: 101–102) and the *Anthologies of Zādspram* (WZ 3.26–33; Gignoux and Tafazzoli 1993: 44–47) state that the origin of the mountains was a consequence of Ahreman’s assault. It is important to recall that, according to the *GBd* 34.18–19, 31–33 (*IBd* 30.19–20, 31–33; Pakzad 2005: 382–383, 387–388), at the end of the struggle against the demoniac forces, the earth will become again flat and the mountains will be leveled to the ground. From the same mountains a river of molten metal will flow out. In it all the resurrected human beings will bathe themselves. The righteous ones will not be harmed, while the impious ones will suffer a lot, but after three days all of them will be purified and admitted to the final happiness. The same river will destroy the celestial dragon Gōzihr (or Gawčihr; Panaino 2005c), and its metal will also close the hole produced by Ahreman’s assault in the celestial vault. The image of the leveling of the mountains, as noted by Lincoln (1983), is surely old, because it was known already by Plutarch in his *De Iside et Osiride*, chapter 47, in the framework of a passage strictly concerning Mazdeism, and probably derived from an earlier source attributed to Theopompus of Chios (first half of the 4th century BCE).

Early Iranian Astral Cosmology and Mythology

Iranian astral cosmology and astrology represent one of the most interesting aspects of the Zoroastrian tradition. The documented representation of heaven inevitably underwent changes and adaptations connected with a continuous development of astronomical knowledge, which was continuously affected by cultural contacts with other civilizations. Avestan sources do not present any form of astrology, which was the result of a Hellenistic evolution. In fact, astrology is not simply the same as just any form of celestial divination, although based on a number of astronomical discoveries, neither is it possible to consider as properly “astrological” any doctrine concerning the power of the astral bodies and their divine influence on human life. Astrology, in its most technical and restricted meaning, was developed by Greek Alexandrine scholars, who transformed earlier traditions, mostly of Mesopotamian and Egyptian origin, embedded in the framework of an Aristotelian conception of the celestial vault assumed to be geometrically spherical. According to the astrological doctrine, nature was composed of four elements (earth, water, air, and fire) and the macrocosm played a direct influence on the microcosm through the action of the seven planets and the twelve constellations. A direct correspondence between human body and heavenly world or between body and the *gētīg* world (as a macrocosm) was developed in the Pahlavi texts, as in the most evident case of the entire chapter 28 of the *Greater (Iranian) Bundahišn*, whose title is *tan ī mardōmān handāzag ī gētīg* ‘about the body of mankind as that of the living world’; Pakzad 2005: 329). Another example appears in the astrological subdivision of the body, which will be treated with reference to so-called *melothesia* (see below).

Not only did astrological traditions have an influence on Iranian culture, but Greek physics, with all its implications, was also known and studied in the Sasanian religious framework (Bailey 1971). These doctrines of Greek origin were essential as the introduction of an elaborated geometrical model of the cosmos and of the mutual relations occurring among the planets and the two luminaries (sun and moon) inside the Zodiac. All these data constituted the necessary premise for any description of an individual nativity (*thema natalis*), i.e., for the calculation of all the pertinent astronomical data concerning the character and the destiny of a person cast according to the general configuration of the heavenly bodies for the exact date, moment, and place of birth.

Classical astrology entered Iran in Parthian times, and became current, with some adaptations, in the Sasanian period. Although scholars have used the term *horoscope* (or *proto-horoscope*) for some Babylonian interpretations of heaven in relation to an individual date of birth, a practice first attested in the Achaemenid period, a “horoscope” was only what is now usually called “ascendant,” i.e., the astronomical point on the horizon just rising at the moment of the birth of an individual (Neugebauer and van Hoesen 1959: 7; Pingree 1993, 1997: 22–24). From this degree, all the other significant astrological points (named in Latin *cardines*) of the *thema natale* (in popular terms, the individual horoscope of birth) were carefully calculated. Babylonian diviners never used such a technique, neither can we attribute to them the same image of the heaven (from the geometrical and physical points of view) established by Greek philosophers.

For these reasons it is more prudent to use the term *astrology* strictly for those doctrines, attested in Iran since the Sasanian period, which patently adopted the whole system of astral predictions developed by Greeks and partly modified by other cultures. Furthermore, in the case of the Avestan tradition, we do not find any *clear* knowledge of the planets as independent astral bodies sharply distinguished from the stars. The existence of mythological cycles concerning the stars or the worship dedicated to them, but also the sun and the moon, has nothing to do with Classical astrology, rather, they appear to be a kind of astral lore of ancestral origin, partly connected with the Indo-Iranian and Indo-European backgrounds (Scherer 1953), partly influenced by contacts with local “non-Indo-European” traditions.

The Avestan Heaven and the Astral Bodies

The sun and the moon have been considered as divine beings, to which respectively the sixth and seventh Avestan hymns have been dedicated. Their names, *huuar-/x^var-*, n. ‘sun’ and *māh-*, m. ‘moon’ are of clear Indo-European origin. In later sources, and particularly in the Middle Iranian context, we observe a progressive identification of Mithra (Pahl. *Mihr*) with the Sun, which, in Khotanese was etymologically associated to Ohrmazd (compare Khot. *ormizde* ‘sun’). Although the identification of the Sun with Mithra, probably also influenced by the role attributed to Šamaš (Sun) in the Mesopotamian framework, is fundamental for the developments attested in the Roman Mithraic Mysteries, it is not supported by any direct Avestan evidence for the earliest times (Gnoli 1979). In *Yt* 6, for instance, Mithra and the Sun are sharply distinguished, while in the *Mihr Yašt*, Mithra and Rašnu announce the Sun, but do not correspond to it. Speculations on the Sun’s lights were probably current, because its luminosity was considered as a weapon against the demons who live and increase their strength in darkness. A speculative connection of pseudo-etymological origin between the rays of the sun (*huuar-/x^var-*) and that of the *x^varənah-* can also be supposed. Not only the moon but also its different phases were worshiped in *Yt* 7.4, while, in 7.2, we also find a reference to its synodic period (“fifteen days the moon waxes, fifteen days the moon wanes”). A special link between the moon and the *x^varənah-* possessed by the Aməša Spəntas should be deduced from *Yt* 7.3, where these entities are mentioned in relation with their (nocturnal?) function as distributors of the *x^varənah*.

The names of some stars and few constellations are attested in Avestan literature, in particular in the *Tištār Yašt*, the eighth hymn dedicated to Tištriia, a divine being (*yazata-*) to be now unanimously identified with the star Sirius, a Canis Majoris, the brightest one visible in the sky from earth (Panaino 1995a). In the same source and in other scattered Avestan passages a few of the stars and constellations were mentioned: *Tištiriāēinī* ‘the stars of Tištriia’ (Canis Minor); *Paoiriiaēinī* (Pleiades, whose importance was very remarkable; Bartholomae 1912–1913); *Upapaoiriia* (Aldebaran); *Haptōiringa* or ‘the seven signs’ (Big Dipper); *Vanañt-* ‘the winner’ (Vega), to which a little hymn (*Yt* 21), particularly important in the invocations against the demons, was dedicated (Panaino 1987b); *Satauuāēsa-*, ‘having hundred servants’, should be probably identified with Fomalhaut (a Piscis Austrini). In particular, Tištriia, Satauuāēsa, Haptōiringa, and

Vanant became in Sasanian cosmology the generals of the four cardinal points and they were put in direct antagonism with the planetary demons (see below). To the present list we must add also *hapta.srū-*, ‘the seven horns’, probably the ‘Little Dipper’, once mentioned in *Vd* 19.42, together with the ‘Peg’ of the heaven, *mərəzu-*, representing the celestial center (just like Dhruva in Vedic and Sanskrit sources), but not the Pole Star, which is astronomically a later discovery (Panaino 1995–1996).

The Myth of Tištriia and the Astral Battle against the Falling Stars

The mythic cycles connected with all the stars attested in Avestan literature are unfortunately unknown with the exception of that of Tištriia, to which two complex and interconnected myths are related. Sirius was considered the chief of the astral army, and directly compared to the role assumed by Zarathustra among human beings. Thus, Tištriia played a remarkable role in the framework of the Indo-Iranian mythological theme of the fight against a demon who had imprisoned the waters (Ved. Indra). Tištriia, rising over the Iranian lands for a whole month of thirty days changes his own body every ten days; first, he appears in the body of a fifteen-year-old virile boy, then in that of a golden-horned bull, and finally in that of a beautiful white horse with golden ears. Assuming the form of a stallion, he asks human beings for sacrifices and then approaches the Vourukaša Sea. The demon Apaoša, in the form of a terrible black horse, aggressively runs against him. Both horses, ramping against each other, fight in order to take possession of the Vourukaša Sea, which seems to assume the form of a mare. After three days and nights of combat Tištriia is defeated and compelled to run away from the sea, sadly lamenting his defeat. Then, the *yazata* declares that his failure was due to the lack of sacrifices by humans, who did not offer him the due worship in which his own name should have been pronounced (*aoxtō.nāman- yasna-*). At this point, it is Ahura Mazdā who offers such a sacrifice in order to strengthen his champion. Thus, Tištriia can charge again against Apaoša and, after an undetermined period of time, he wins at midday. Now, Tištriia enters the Vourukaša, agitating its waters. The star Sirius raises from the sea, followed by Satauaēsa, and the clouds also ascend from the mountain Us.həṇdu, which lies in the middle of the waters. Apam Napāt, ‘the Son/Nephew of the waters’, an important divinity of Indo-Iranian origin, concurs to distribute waters and rains on the material world.

In order to understand such a myth it is necessary to consider the possible astronomical connexions that are clearly contained in the framework of the second duel attributed to Sirius, as explained in the same *Tištār Yašt*. As previously noted, there are no clear references to the planets in Avestan sources, with the exception, in itself unclear, of a proper name belonging to a Mazdean man, called *tīrō.nakaθβa-*, m. (*Yt* 13.126, Eilers 1976: 7, 47; Panaino 1995a: 61–85), where we can recognize the name of a western Iranian divinity, called *Tīriya* (just as Nabû, Thoth, and Hermes were associated with the planet Mercury), in Pahlavi *Tīr*. He was also considered the patron of the scribes in the Achaemenid milieu. If this connection is true, the existence of the planets was already known in western Iran thanks to the impact of Babylonian culture. Although it is known that such a divine name was attested, at least in onomastics,

in eastern Iran, nothing more can be stated about any eventual role attributed to such a planetary divinity among Avestan communities. While the planets assumed a negative role only in Pahlavi sources, in the *Avesta* this hostile function was clearly played by demons called *yātus* 'wizards' and *pairikās* 'witches'. In particular, the latter were called *stārō.kərəmā-* 'starred-worms' (Panaino 2005c), and they probably represented the falling stars, whose commander was the *pairikā dužiīāiriīā* 'the witch of the bad year', the direct enemy of Tištriia. As in the case of Apaoša, Tištriia, leader of the fixed stars, defeats the army of the falling stars, thus preserving the cosmic order against the famine brought by the *pairikās* actually flung by Agra Mainiiu himself in order to defeat Sirius and the (fixed) stars, named *aš.ciθra-*, i.e., 'possessing the image (or, as generally assumed, the origin/seed) of the waters (or, of the rains)'. In addition to the *aš.ciθra-*, we find, in Yt 12.29–31, two other kinds of stars: the *zemas.ciθra-* 'possessing the image (or the origin) of the earth' and the *uruuarō.ciθra-* 'possessing the image (or the origin) of the plants'. Thus, the combat between Ahura Mazdā's forces and those of Agra Mainiiu, fundamental in the Zoroastrian tradition, assumed a particular development in the celestial dimension according to a theological pattern in which the regular and harmonious movement of the fixed stars became a manifestation of cosmic order (*aša-*), while that of the falling stars, unpredictable and disordered, was considered as a demonic example of cosmic disorder (*druj-*) and, thus, connected with famine and climatic cataclysms. The same pattern was later adopted with the demonization of the planets, which assumed the same negative function of the falling stars.

Returning to the mythical cycle of Tištriia, we may note that his three *avatāras* chronologically correspond to the phase of the heliacal rising of the star Sirius (an astronomical phenomenon that occurred c. June 17, 800 BCE, until the beginning of the Vulgar era, i.e., around the 1st century CE; Panaino 1995a: 24), in season in which the Iranian lands suffer famine and lack of rains. The two following combats against Apaoša, the first one of three days, the second one of undetermined length, approximately cover the temporal space necessary for the return of the rainy season (September) in the Iranian plateau. In this part of the myth we find only a limited connection with the astral dimension, because the astronomical role of Apaoša, if any, is not determinable. On the contrary, the astral framework of the confrontation with the Pairikās, clearly in connection with the high frequency of meteoric showers in summer, appears evident (Panaino 1995a). The double victory of Tištriia against both Apaoša and the Pairikā Dužiīāiriīā represents the success of the Ahuric forces over the famine introduced by Agra Mainiiu.

In the Sasanian period, in a different context such as that of the astrological tradition, the confrontation between fixed and falling stars was transformed into that between fixed stars and planets, now demonized (as, e.g., in the *GBd* 5A.3):

Those planets, when they rushed into the firmament in this manner, fell striving with the fixed stars (as follows): the dark sun and moon with the sun and moon (proper), the princes of luminaries (*rōšnān šahryār*); Jupiter (Ohrmazd) with the Great Bear (*Haftōreng*), general of the north; Venus (*Anāhīd*) with *Sadwēs* (Fomalhaut?), general of the south; Mars (*Wahrām*) with Vega (*Wanand*), general of the west; Mercury (*Tīr*) with Sirius (*Tištār*), general of the east; Saturn (*Kēwān*) with Polaris (*Mēx ī Gāh*), the commander-in-chief. (compare MacKenzie 1964: 515)

The planetary demons were called *parīgān* (i.e., *pairikās*), and they were considered responsible for any negative influence on the sublunar world. Their demonization cannot be separated from the fact that the planetary orbit assumes in certain phases a retrograde movement, so appearing to be irregular. This phenomenon was connected with one of the main characteristics of the falling stars. Thus, the later denomination of the planets as *abāxtar(ān)* in Pahlavi derives from OIr. **apāxtara-* ('backward-turning, retrograde'), a comparative stem built on *apāk-/apāṅk-* 'backward' (from the preposition *apa* 'behind'; Eilers 1987; Panaino 1993). We cannot exclude the possibility that such a denomination was put in relation with the northern direction, the side of the demons, because another meaning of **apāxtara-* was 'north'. The Greek denomination of the planets (πλανήτης) also testifies to their irregular movement, being derived from πλανάομαι 'to wander'; it fittingly corresponds to Pahl. **wiyābanīg* (from the verb *wiyābān-* 'to deviate'), attested in the Middle Persian reversed denomination of the stars, considered as *a-wiyābanīg*, 'inerrantes, not deviating' (Henning 1942a: 98, n. 3). Moreover, in the *Avesta* another *Pairikā*, named *mūš* 'the rat', is once mentioned in Y 16.8. Her memory survived in Pahlavi texts as *Mūš Parīg*, as for instance in *GBd* 5A.6, where she is described as *dumbōmand* 'tailed'. If we consider that in other ancient traditions like the Arabic one, comets' tails were usually referred to, we could reasonably suppose that such a demon was a comet.

Later Mazdean Cosmology and Astrology

While our direct knowledge about the actual development of Iranian cosmology and astral sciences in the Parthian period is very poor, Pahlavi sources offer a relevant number of historical data regarding astral subjects. The already described elaboration of a cosmic period lasting 12,000 years clearly presents many astrological implications and a number of developments, already mentioned. But some Arabic sources (Abū Ma'shar and al-Sijzī; Kennedy and van der Waerden 1963: 316–317; Pingree 1968: 28–29; van der Waerden 1977–1978: 368–370) make references to other cosmic cycles used for astronomical calculations in Sasanian times. Three different examples of the cosmic year were actually quoted: that "of the Indians" of 4,320,000,000; that of Āryabhaṭa (*Arjabhaz*), of 4,320,000; and the one attributed to the "Persians" and some "Babylonians," of 360,000.

In Sasanian times, the interest in science increased enormously, and Pahlavi texts confirm strong activity, politically supported by Sasanian kings, directed to the acquisition of foreign books and doctrines, although all these importations were presented as a recuperation of an earlier Iranian wisdom, scattered after the invasion of Alexander the Great (Bailey 1971; Shaki 1981; Panaino 1999c). As a result, a number of Greek and Indian texts of astrology and astronomy, physics, medicine, and mathematics were translated into Pahlavi, and after the collapse of the Sasanian Empire some of these books were retranslated into Arabic; some still partly survive in Byzantine Greek and Mediaeval Latin (Nallino 1922; Pingree 1989).

Persians were very careful about calendrical problems, and for this reason they organized general meetings of scientists in order to prepare and improve their own sets of astronomical tables (*Zīg ī Šahryārān*), of which at least three different redactions are known, in particular thanks to the Arabic astronomers who used them (Panaino 1998). The syncretistic tradition adopted by Sasanian scholars was very significant, because they rarely invented new doctrines. In fact, in the elaboration and adaptation of the astrological art to Mazdean theological patterns such a mixture of methods and patterns of different derivations is frequently visible (Brunner 1987). Sasanian astrology, however, also produced a few relevant innovations, such as the doctrine of the planetary conjunctions of Saturn and Jupiter (Kennedy 1964; Pingree 1997: 42–44; Yamamoto and Burnett 2000), an astrological method that endured until the European Renaissance. Another innovation concerned the creation of a so-called “continuous” astrology, in which historical horoscopes were cast thanks to a number of planetary chronological periods and sub-periods. These cycles were essential for the calculation of the continuous astrological influence upon a person or a land (Kennedy 1964: 26–30; Pingree 1997: 44). This practice probably derived from a Hellenistic tradition. We must also remark that political astrology was current in Sasanian times, while it was, for instance, forbidden in the Roman Empire. “Catarchic” and “interrogative” astrology (the first, aiming at the determination of the most auspicious moment to begin an enterprise; the second, aiming at answering a particular question posed to the astrologer according to the horoscope of that precise moment) were practiced (Pingree 1997: 47). These practices entered Iran not only from the Hellenistic world, but also via India, where Greek astrology, with a number of Egyptian additions (as, for example, the thirty-six Decans, i.e., a subdivision of every zodiacal sign (= 30 degrees) into three zones, each one of 10 degrees; Panaino 1987a), was already adopted and adapted to Hindu local religious and mythological traditions (Pingree 1997: 31–50). Examples of “interrogative” astrology, presented with a technical terminology about the planetary positions, are patently attested in two astrological previsions of the *Kārnāmag ī Ardašīr ī Pābagān* (KAP 3.4–7; 4.6–7; Panaino 1994). Both these reports were requested by Ardawān, the last Parthian king, from his astrologers when the young Ardašīr (who later became the first Sasanian *šāhān šāh*) escaped from the direct control of his master. The Parthian king, in fact, desired to know whether it would be possible to catch the fugitive. These horoscopes closely followed some interrogative rules well attested in Greek astrological literature.

In the framework of the spherical model, we find a division of heaven between an extra-galactic sphere, named *spīhr ī agumēzišnīg*, i.e., ‘unmixable’, to which the Milky Way was related, and an inferior one, the *spīhr ī gumēzišnīg* ‘sphere of mixture’, including the twelve constellations (Pahl. *12-axtarān*) involved in the “mixture” with the demoniac and evil forces (see GBd 2.8–9; Henning 1942a: 232–233, 240; Belardi 1977: 125–126). It is to be noted that not only the geometrical concept of sphere itself but also the Pahlavi word for ‘sphere’ (*spīhr*) was of Greek origin. The Sasanian syncretism in astrological and astronomical matters is patently visible also in the case of the two main horoscopes attested in the Pahlavi literature; the first, described in chapter 5 of the *Greater (Iranian) Bundahišn* is precisely a ‘world horoscope’ (*zāyč ī gēhān*), or *thema mundi*. This horoscope is like that of Gayōmard (GBd 6F), which does

not follow the Hellenistic *thema mundi*, as previously assumed by MacKenzie (1964: 523–525), but shares the same patterns with the Indian horoscope for the birth of the highest type of *mahāpuruṣa*- ‘eminent man’, i.e., for that of the best kings. This astronomical configuration is attested in the Sanskrit astrological treatise *Yavanajātaka* (‘The Horoscopy of the Greeks’) 8.3–5; 9.1, attributed to Sphujidhvaja, who wrote a versified version in 269/270 CE (the prose text attributed to Yavaneśvara was translated from Greek in 149/150 CE; Pingree 1964–1966 = 1973: 123; 1978 II: 27, 30, 225–228). In the Mazdean world horoscope as well as in the Indian the seven planets (i.e., the five planets plus the sun and the moon) respectively occupy the exact degrees corresponding to their own astrological exaltations (i.e., that particular place in the Zodiac where a planet assumes its own strongest position and the maximum of its influence), as occurring in the zodiacal signs, with the exception of Mercury, which the composer of the *Bundahišn* did not put in *Virgo* (15 degrees), where its standard point of astrological exaltation was traditionally located, but rather in *Pisces*. This probably happened because such a planet would have been too far from the Sun (*Mīhr*), its longest elongation from such a luminary being 22 degrees 30 (Raffaelli 2001: 93–94). Although the simultaneous disposition of all the planets in their exaltations was astronomically impossible, the Indian prototype adopted this rule for speculative reasons. The same Pahlavi horoscopes of the *Greater (Iranian) Bundahišn* use the Greek astrological system of the twelve ‘houses’ (or ‘places’; Pahl. *gyāg* and Gk. *dōdekátōpos*). In WZ 30 (Gignoux and Tafazzoli 1993: 98–99) we find a *melothesiá*, a symbolic representation of the correspondences connecting the parts of the human body to the planets and the zodiacal constellations. This source can be, at least partly, compared with the *melothesiá* preserved in the *Yavanajātaka* 1.123–126 (Pingree 1978 II: 251–252, 325–326). Very interestingly, this Pahlavi text does not consider the planets as negative, but as harmonic parts of the creation. In GBd 28.4, the use of hands and feet is compared with the seven planets and the twelve zodiacal constellations (*ud dast ud pāy abzār čiyōn haftān ud dwazdahān* ‘hands and feet are like the seven [planets] and the twelve [constellations]’; Pakzad 2005: 330).

As noted before, the extraordinary role attributed to the conjunctions of Jupiter and Saturn (occurring about every twenty years) was one of the most important original elaborations of Sasanian scholars (Pingree 1963a). These astrologers, on the occurrence of any of these conjunctions, started to calculate “historical” horoscopes, trying to identify the most important events for the following twenty years. As carefully explained in the Islamic sources (partly of Pahlavi derivation), these conjunctions were divided into four periods: “Little Conjunctions” (every twenty years), “Middle Conjunctions” (after c. 240 or 260 years, with a shift of triplicity) and “Great Conjunctions” (after c. 960–980 years): a whole cycle of four Great Conjunctions (less than 4,000 years) corresponded to a “Mighty Conjunction.” This theory was based on the evidence that every conjunction takes place twelve (in some cases thirteen) times exactly in the same astrological triplicity, i.e., only in the three signs of the Zodiac of the same nature (three signs of “fire,” three of “earth,” three of “air,” three of “water”). A Middle Conjunction, occurring after about 240 or 260 years, corresponded to an astrological shift from one triplicity to the following one, from the triplicity of fire to that of earth, then to that of air and finally to that of water, when the entire cycle started again. While the Little

Conjunctions were connected with the appearance of rebels and of religious sects, the Middle Conjunctions were closely associated with the destiny of royal dynasties, possibly resulting in historical violent change of power, but it was the “Great” Conjunction, more or less corresponding to the turn of a millennium, that assumed particular religious importance (Kennedy 1964: 30–37). For instance, Islamic astrologers focused on the importance of the shift of triplicity, which was considered as a witness of the birth of Muḥammad and the appearance of the Islamic religion (for more details see Labarta 1982: 77–82). Although the full cycle of the Saturn/Jupiter conjunctions did not exactly correspond to the millenarian scheme previously adopted by Zoroastrians, an association between the two systems was established, as it happened in the case of Māšā’allāh (a Persian Jew from Baṣra, surely one of the most important astrologers in the ‘Abbāsid caliphate, who died in 815 CE), whose astrological chronology of the world history depends on a millenary cycle of 12,000 years, although it includes the Deluge and takes into account the birth of Christ and Muḥammad in the 10th millennium (Pingree 1968: 73–75; Kennedy and Pingree 1971: 73–75).

The astrological chapters of the *Bundahišn*, in particular, offer a good example of the complex elaboration of astrological doctrines of different origins made by a class of professionals, called *axtar(ā)mār*, *starōšmār*, or *kēd*, whose importance was also relevant at the Sasanian court. They, in fact, cast horoscopes for the king and the royal family, offered predictions at the beginning of every regnal year, and were consulted before relevant enterprises, but also played an intellectual role at the highest levels, as translators from other languages, and as specialists in calendrical, mathematical, and geometrical problems. According to the same patterns developed in the framework of Greek astrology some of the planets (*GBd* 5B.14; MacKenzie 1964: 520) were associated with the basic natural elements: Tīr with air and Venus with water (Raffaelli 2001: 54–56). As in Hellenistic astrology, each planet was provided with two “domiciles,” one nocturnal and one diurnal (Pahl. *kadag-xwadāy* ‘the lord of the house’ or ‘domicile’, i.e., the place where it assumes the maximum of power; MacKenzie 1964: 528, n. 76). But we also find some innovations, as in the case of the lunar knots, located in Gemini and Sagittarius, which were known but not used in Classical astrology. The two knots were inserted among the planets by Sasanian astrologers, following an Indian pattern (probably of the 5th century CE), where the two invisible demons of the eclipses, Rāhu and Ketu, were considered as additional planets, which then became nine (*navagraha*- ‘the nine planets’). For this reason, we find in the Pahlavi world horoscope a ‘black sun’ (*mīhr ī tamīg*) and a ‘black moon’ (*māh ī tamīg*), duplicates of the two Indian “false” planets, which were considered as two dark astral bodies that occulted the sun and the moon, producing the phenomenon of eclipses. Clearly they played the same function of the Head and Tail of the heavenly Dragon, named *Gočīhr* or *Gawčīhr* in Pahlavi (Panaino 2005b; compare also various pertinent articles by Hartner collected in 1968). Iranian sources in Pahlavi, Sogdian, and Chorasmian confirm the existence and adaptation of the Indian system of the *nakṣatras* (Pahl. *xwurdag*) with twenty-seven and twenty-eight “asterisms,” or more simply groups of stars (e.g., *GBd* 2.2; Henning 1942a: 231, 242–246), normally referred to as “lunar stations” of 13 degrees 20, because the nocturnal movement of the moon was put in connection with their positions.

The Planets, Their Names, and Their Demonization

The name of the five planets visible by the naked eye are clearly attested only in Middle Iranian sources, although the knowledge of these astral bodies should be much more ancient; in Pahlavi they are: *Anāhīd* (Venus), *Tīr* (Mercury), *Wahrām* (Mars), *Ohrmazd* (Jupiter), and *Kēwān* (Saturn). The later demonization of the planets appears to be in evident contrast with the peculiar fact that some of them have the same names of the most important Mazdean gods. When western Iranians discovered the existence of the planets, they followed the earlier Mesopotamian denominations, exactly as the Greeks did. The Mesopotamian schools of astral divination first distinguished and then denominated the single planets, associating them with some of the highest divinities of the Iranian pantheon. Then their names became so deep-rooted that they could not be changed even when the planets were demonized.

The table below provides the key for this development: one planet was named “Mars” because it was associated with the star of the god Nergal; another “Mercury” because of its association with Nabû, god of the scribes; “Jupiter” was so named because of his identification with the god Marduk, the highest one; Venus, the only planetary divinity with a feminine name, after a patent connenction with Ištar, goddess of fertility; finally, Saturn, the slowest planet, with Kajamānu. In their turn, the western Iranian people adopted the same scheme after a process of association between their own divinities and the Semitic ones, as follows:

Planet	Akkadian	Greek	Old Persian	Middle Persian	Sogdian	New Persian
Mars	Nergal	Áres	*Vr̥θrayna-	Wahrām	Unxān	Bahrām
Mercury	Nabû	Hermês	*Tīriya-	Tīr	Tīr	Tīr
Jupiter	Marduk	Zeús	A ^h uramazdā-	Ohrmazd	Urmazt	Urmazt
Venus	Ištar	Aphrodītēs	Anāhitā-	Anāhīd	Nāxid	Anāhīd
Saturn	Kajamānu	Krónos	*Kayvānu-	Kēwān	Kēwān	Keyvān
cf. Lat. Saturnus			(*Zruvan)	(Zurwān)		

The planets, when referred to as demons, were called *abāxtar* ‘retrograde’ or *nē axtar* ‘non-star’, but they were sometimes also called *gēg* ‘robbers, bandits’ in opposition to the stars, the ‘givers’ (*bagān*) par excellence:

spihr gyāg ī bagān ī nēwagīh baxtārān kē-šān har nēwagīh baxtārīh az-iš hamē baxšēnd rāstīhā ud haftān stār karapān parīgān ī azēr āwēšān dwārēnd appurdārān ī jud-baxtārān kē-šān dēnīg nām gēgān. ‘The sphere is the place of the ‘givers’ (*bagān*) who are distributors (*baxtārān*) of goodness and they distribute (*hamē baxšēnd*) in a right way their own apportion (*baxtārīh*) of goodness, and (it is also the place of) the seven stars (i.e., the planets), the *karapān* (the wizards) and the *parīgān* (the witches), which move beneath them, are robbers (*appurdārān*) and antagonistic distributors (*jud-baxtārān*). They are named ‘bandits’ (*gēgān*) according to the religion.’ (ŠGW 4.8–10; de Menasce 1945: 50–51)

Only in a later source like the *‘Olamā’-ye Eslām* (Zaehner 1972: 412) do we find a desperate attempt at justifying their denomination. Ohrmazd (the supreme god) surrounded the planets (and very peculiarly also the luminaries) with light, giving them Ahuric names, instead of their real (demoniac) denominations, which were: *Zerij* (Saturn), **Tarij* (Jupiter), **Nānyaiθ* (Mars), *Tarmad* (the Sun), *Xišm* (Venus), **Sēj* (Mercury), and *Bēš* (the Moon).

The process of demonization was not without contradictions: For instance, *GBd* 5B.12, following the standard patterns of the classical astrological doctrine, denominated two of the planets as *kirbakkar* ‘beneficent’ (Ohrmazd, Anāhīd), two as *bazakkar* ‘maleficent’ (Kēwān, Wahrām), while Mercury (Tīr) was considered as astrologically “neutral.” It is also important to recall that some later Mazdean sources attest a frequent confusion between Tištar and Tīr, a situation probably due to a relevant number of earlier connections between these two astral bodies (Panaino 1995a: 61–85). Other contradictions appear in the case of some rituals attested in Zoroastrian folklore as, for instance, in a number of apotropaic incantations (in Pāzand) to the planets, like the following one: *pa zōr axtarqn u aḅāxtarqn tan darust baṭ* “by the power of the stars and the planets, may he be healthy” (Kanga 1900: 144–145; Panaino 2005a). The Mazdean planetary denomination still survives in the Arabic and Latin versions of the famous magic medieval treaty *Picatrix* (Pingree 1976: 178–179), although their names appear in a corrupted Arabic spelling: *Kēwān*, *Hurmuz*, *Bahrām*, *Mihr*, *Anāhīd*, *Tīr*, *Māh*; Lat.: *Kayhven*, *Harmiz*, *Baharam*, *Mahe*, *Anyhyt*, *Tyr*, *Mehe*. This source of enormous importance for Western magic was translated in medieval Spain in 1256 CE at the court of Alfonso X the Wise, king of Castile, from an Arabic original, entitled *Gāyat-al-hakīm* ‘The Aims of the Savior’, and attributed to al-Majrīṭī (d. 1004–1007 CE) from Cordoba.

An important part of the cosmic battle against Ahreman was played out in the heavens. While the superior level of the galactic sphere, closer to paradise, was not involved in the fight, the planetary field of operation, or the area in which the planetary demons were able to cause harm, was the *spīhr ī gumēzišnīg* (‘the sphere of the mixture’), or more simply the zodiacal belt. Here these demons fought against the fixed stars (*GBd* 2.8–9; Henning 1942a: 232–233, 240; Belardi 1977: 125–126), so that every planet attacked one of the “cardinal” stars or asterisms (*GBd* 5.4; Panaino 1999a):

Cardinal point	Planetary demon	versus	Star or constellation	
North	Ohrmazd (Jupiter)		Haftōring	(Ursa Major)
East	Tīr (Mercury)		Tištar	(Sirius)
South	Anāhīd (Venus)		Sadwēs	(Fomalhaut)
West	Wahrām (Mars)		Wanand	(Vega)

Saturn, Kēwān, at the center and in the highest heaven, opposed the general of the generals, the Pole Star, *Mēx ī Gāh* (Henning 1942a: 231, 241–242; Panaino 1995–1996, 1999a).

Zoroastrians (and Manichaeans too, although with some different implications; Panaino 1997) adapted an Indian astral model, in which the irregular movement of the

planets was governed by means of cords (*band*, *zīg*, *hampaymānag*, *rag*). These bindings should put a limit to any potential damage produced by planets in the sublunary world (ŠGW 4.46; de Menasce 1945: 54–55). The same cords appear in a mechanical model of the astral sphere (see *GBd* 5B.1–3; MacKenzie 1964: 517). Here all the astral bodies, moving around Mount Harburz, are pulled by cords of wind, just as in the Purāṇic literature where all the astral bodies rotate around Dhruva, the fixed Pole of the heaven (Panaino 1998). The function of these cords (Skr. *vāta-/vāyu-raśmi-*; *vātabaddhāni-*) had, in the Iranian framework, a remarkable anti-demoniac importance, which was probably connected with an earlier Iranian tradition in which Tištriia had to bind the Pairikā Dužiiāiriia with an infinite number of bindings (Yt 8.55). A fatalistic development regarding the function attributed to the cords of wind is attested in the *Wizārišn ī čatrang*, paragraph 30, a Pahlavi text dedicated to chess and backgammon, where the turning of the counters in the game of *nard* (a kind of backgammon), due to the dice, was compared with the destiny of human beings, living in the *gētīg* world, who were tied by a bond to the *mēnōg*, so that all of them must turn around and move according to movement of the planets and the zodiacal signs (Panaino 1998, 1999c: 251; for text and translation see also Daryaei 2010).

In the framework of the Mazdakite doctrine, an Iranian heretical movement of the 6th century CE, of Mazdean derivation but full of Gnostic doctrines, the planets were not demonized; Šahrastānī (1086–1153 CE), a Persian historian and heresiographer, who wrote an important source concerning “the Sects and the Creeds” (Gimaret and Monnot 1986: 631–636), states that four powers were sitting in front of the god; these forces operated through seven minor figures corresponding to the five planets and the two luminaries revolving inside a circle divided among twelve spiritual beings (the constellations). The precise identification of all these celestial images is still a matter of discussion (Christensen 1925: 81–82; Klíma 1957: 188–191, 219–221; Shaki 1985: 535–541; Gimaret and Monnot 1986: 634–636). As also in Western countries, the names of the seven days of the week were associated and denominated according to the planets and luminaries in various Iranian countries, probably thanks to Christians and Manichaeans. This tradition also entered western Iranian lands during the Roman Empire between the 1st and the 3rd century CE (Panaino 1995a: 69, n. 39).

Other Doctrines

Although all the stars should have been considered divine and positive according to the Zoroastrian tradition, an Arabic astrological text attributed to Zoroaster (*Ketāb al-mawālīd*; Kunitzsch 1993) held that there were stars with a negative influence (Panaino 1996b). This peculiar doctrine, attested also in the Persian *Revāyats of Farāmarz* (Dhabhar 1932: 431) probably derives from a Greco-Babylonian background. Some traditions diverging from the official Zoroastrian theological patterns were probably current in Iranian folklore. For instance, according to Eznik of Kolb, an Armenian Christian writer of the 5th century CE (*De Deo*, or *Against the Sects* 2/8), the sun was generated through the incest of Ohrmazd with his mother, the moon through that with his sister. There was a tradition, confirmed by statements attested in the

Christian martyrologia and other polemical texts, which attributed Ohrmazd with the generation also of the stars thanks to incest, presumably with his own daughter. The relation of this legend to Zurvanism is not at all certain (Panaino 2008).

The Iranian astral iconography, basic to the interpretation of the so called *sphaera barbarica* (i.e., the representation of the astral bodies and their characters according to a view of the heavens, which was different from that usual in the Greek and Roman traditions), survived thanks to a mass of Arabic and Latin translations, as for instance in the remarkable case of the prestigious works composed by Abū Ma'šār, where a lot of Sasanian material was used. This is how the thirty-six originally Egyptian Decans (Pahl. *dahīg*), three per zodiacal sign, which had been transferred to India (where they appear in the *Yavana-jātaka*; Pingree 1963b, 1978), entered Iran, where their Sasanian reception still reflected the intermediation played by the famous Indian astrologer Varāhamihira (6th century CE). These Pahlavi materials were finally known through Arabic translations, as in the case of Abū Ma'šār's *Introductorium maius in Astronomiam* or 'The Larger Introduction into Astronomy' (Dyroff *apud* Boll 1903: 482–539; Sezgin 1979: 139–51) and its Latin compilation (*Astrolabium Planum*) by Pietro d'Abano (c. 1316), in Europe between the Middle Ages and the beginning of the Renaissance (Warburg 1922; Pingree 1963b: 223; 1987, 1989; Saxl 1985: 280–291; Burnett and Pingree 1997).

Final Remarks

As we have seen, Iranian cosmology presents a number of similar patterns to the early Indian one, which probably derive from a common heritage, although many particular developments took place in the framework of the Mazdean tradition. If the opposition of *aša-* vs. *druj-* can be also compared with the Vedic one between *ṛtá-* and *druh-*, it assumed special significance outside of a restricted ritual framework. Furthermore, the Iranian distinction between a "mental" and a "living" dimension was one of the most important original doctrines elaborated by Zoroastrians. It is strictly connected with the concept of time and its division between eternal and limited time. This doctrinal background had enormous influence on Iranian mythology, cosmology, cosmography, and uranography as well. The representation of the world as an enormous trap set for Ahreman, considered ontologically inferior with respect to the seminal and creative power of Ohrmazd, must be again underlined. Thus, the representation of the heaven and of the astral beings as one of the essential components of this fight had significant influence on the way in which astral mythology and later Classical astrology were adapted and developed. In addition, the particular role of Iran in the transmission and circulation of astral pseudo-scientific and scientific doctrines was remarkable during its whole history. From East and West and contrariwise, Mesopotamian, Indian, and Greek traditions had an enormous influence on Mazdean astral lore and its later astrological developments. Sasanian Iran, in particular, was enormously important for the number of translations of original Greek astronomical and astrological sources and of Indian books, which partly survived in Arabic and Latin versions. This confirms not only the close attention dedicated by priestly schools to these subjects, but also the tremendous legacy left by the Iranian pre-Islamic world to medieval culture, a heritage which was not without special and original interpretations of Mazdean origin.

Further Reading

Iranian cosmology has been the subject of very many investigations, although a basic description can be found in every general history of Zoroastrianism. The reader will profit from the studies by Gnoli (1962, 1963, 1985, 1995), Molé (1959, 1963), Shaked (1967, 1971, and his pertinent articles collected in 1995), Schmidt (1996) and Zaehner (1972) about the *mēnōg* and *gētīg* and regarding the concept of limited and unlimited time (Zurwān). Avestan mythical geography has been mostly investigated by Gnoli in a number of works quoted in this chapter (in particular 1982, 1985, 1987, 1989), which generally contain an enormous bibliography. For a more detailed discussion of Avestan astral mythology see Panaino's edition (1990b) and discussion of the *Tištār Yašt*. Still fundamental are the articles by Henning (1942a) and MacKenzie (1964) about astronomy and astrology in the *Bundahišn*, which need revisions in light of the various studies by Pingree. For a summary of his researches in this field see Pingree (1997), and Panaino (2009), and the presentation of the Sasanian world horoscope offered by Raffaelli (2001). Important contributions on astral subjects have been published in the *Encyclopædia Iranica* by Pingree (1987), Brunner (1987), and various entries by Panaino (see "Haftōrang," "Tištrya," "Zodiac"), and in *The Encyclopedia of Ancient Natural Scientists* (Keyser and Irby-Massie 2008). Also important is the

early article by Nallino (1922) where the Pahlavi versions of Greek sources have been analyzed, and the overview by Sezgin (1979) about Arabic reception and by Pingree (1998) about Arabic, Latin, and Indian cultural exchanges with the Iranian world. The controversial discussion (mostly between van der Waerden and Pingree) concerning the influence of the different Indian astronomical schools (*paḫṣas*) on Sasanian astronomy and the interpretation of the mathematical parameters adopted for the redaction of these cycles has been summarized by Panaino (1998: 161–179), in the framework of the discussion of the whole doctrine of the astral wind chords. For a more detailed analysis of the theological adaptation of this astrological doctrine to the Mazdean millenary system, see the comments given by Pingree *apud* Panaino (1996a), with regard to the ZWY 6.4, 6.10, 7.10, 9.14 (Cereti 1995b), where the history of the world was arranged according to this system of the planetary exaltations.

The Christian cycles of the magi that were developed around the pericopes (extracts from a text) contained in the Gospel of Matthew (Mt 2.1–12) is full of Iranian elements, strongly connected with the reputation of the Mazdean priests as sky watchers and observers of astral phenomena (Panaino 2004b, 2012). On the latter see also Frenschkowski, "Christianity," this volume.

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