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Introduction

No matter where they are on earth, when people look at the sky, they see the sun, moon, stars, and planets rising and setting every day and every night. Nonetheless, their perception of what they are looking at differs significantly depending on the cultural context(s) they were born and lived in, and their location on earth. Local climatic conditions also affect how stargazers experience and interpret the sky. Many different cultures have thought deities and demons inhabit the heavens. Some believed the heavens were densely populated by entire societies of such beings who fought with each other, loved, danced, and inhabited separate regions governed by the main gods or immortal emperors. Others saw the forces of Good and Evil in an eternal struggle in the universe. Again, others saw the universe controlled by a single god. The sun and the moon, but also the other five planets observable with the naked eye, were either understood as divinities or as demons. Eclipses were also interpreted as the product of demonic forces, who over time became identified as two further planets or as a snake or dragon. Creation myths ascribed different pathways to the sun and the moon, and the planets known to their inventors, narrators, painters, and sculptors. Such pathways were divided into different spatial and temporal units, such as the zodiac signs, the decans, or the horas.

Despite all of these differences, a surprising number of the cultures inhabiting the millennia covered by the chapters of this book shared a number of these perceptions, transforming them time and again on their journeys across Eurasia. Solar and lunar goddesses and gods moved from Mesopotamia or the Greek and Roman Mediterranean to Central Asia and the northern regions of South Asia, keeping some of their symbols and functions, while also merging them with those of locally worshipped deities. Solar and planetary gods moved from Iran and Mesopotamia or from Asia Minor into the Mediterranean region, where they entered the local pantheons and were no longer considered foreign intruders.

Similar processes took place with a scientific invention made in Mesopotamia sometime after the middle of the first millennium BCE – the zodiac. Invented as a mathematical device, the zodiac is a circle of 360° divided into twelve equal intervals of 30° named after sets of stars moving in close vicinity of the ecliptic, the path of the sun. It spread quite rapidly to the Arabian Peninsula and along

the shores of the Mediterranean to Egypt and Greece and then to Rome, entering temples, synagogues, churches, palaces, and municipalities, moving from the sphere of science into the spheres of worship, politics, and administration. Similar changes occurred a few centuries later in the Gupta empire (early fourth to late sixth century) in northwest India as well as in Buddhist Central Asia, China, and Japan, and other East Asian states.

The scientific meaning of the zodiac received further input from Egypt with concepts such as the decans, who gave each sign a finer substructure of three times ten degrees, and by interconnecting with older Mesopotamian ideas about the properties of the planets, such as their colours and their beneficial or malefic impact on human life, kingdoms, or entire regions. The astral science formed by these and further concepts as well as their appropriate methods, is usually known in English as astrology. While often contested, it was used to explain the rise and fall of dynasties or the appearance of prophets, to choose a bride or a groom, to determine the character and life expectations of a new-born babe, or to predict the outcome of war, and many other events in human life.

Bringing together planetary deities and astrology gave rise to the planetary seven-day week, which originally began on a Saturday, the day named after Saturn, the god who ruled the first hour of that day. This astrological week, apparently invented in Rome and other parts of central/southern Italy (Ilaria Bultrighini), also spread across Eurasia, for example, to India, Tibet, China, and Japan. Not all cultures adopted it and those who did, sometimes introduced their own adaptations. In northern Europe, Viking gods replaced some of the Graeco-Roman gods and in different parts of Eurasia, the first day of the week changed from Saturn to sun or moon.

Another form of ordering the heavens was the grouping of stars to form constellations. Our modern constellations are founded on the system of Mesopotamian constellations, which then circulated to Egypt and the Greek world where they were combined with local astral traditions and often reshaped in accordance with local mythology. Stars were also grouped in other ways to define regions of the sky. One such set of groupings are the lunar mansions. These are formed by a single star or by groups of two, three, or more stars through which the moon passes each night during its monthly rotation around the earth. Different systems of order were designed in East Asia, South Asia, West Asia, and the Mediterranean. Historical sources claim that the lunar mansions originated in South Asia and spread westward. However, clear evidence of connections between the South Asian system and those in West Asian and European sources is only found in the early modern period. The lunar mansions from Arabic sources, in contrast, spread not only through the astrological and astral-magical literature of many Islamic societies. They also came to be known across medieval Europe through translations into Latin, Hebrew, Castilian, and other languages.

Many of these religious as well as scientific perceptions of the night sky, celestial bodies, and heavenly events were translated into images and presented as or on objects. These objects could be expensive, luxury ones, or items of dai-

ly life, depending on the material from which they were made and their size. Some were commissioned individually, while others were commodities of mass production. Seals, sculptures, coins, mirrors, plates, ewers, bowls, tomb ceilings, coffins, wheels, calendar stones, ceremonial swords, mosaics, murals, oil paintings, jewellery, banners, scrolls, manuscripts, and printed books are only a few of the objects endowed with astral imagery in different Eurasian cultures from ancient Mesopotamia and Egypt to early modern countries in Christian Europe, the Middle East, India, China, and Japan. A variety of materials was used for producing the objects, highlighting the connections between different parts of a society and across its boundaries to neighbours and far away trading partners. Among them were precious and base metals, stones, silks, wool, or cotton, parchment, papyrus, and different types of paper, as well as plants, bones, clay, and rocks.

In this book, 20 historians of science, the arts, and religions introduce objects, astral themes, and academic questions from 20 countries or regions in about 20 different time periods. According to their research interests, expertise, and personalities, their texts take different approaches and use different styles of narration. Some focus on a single object (Daniela Mendel, Antonio Panaino, Beatrice Leal, Jeffrey Kotyk, Dieter Blume, and Sonja Brentjes) including an Egyptian tomb, a monumental Sasanian rock relief, the sauna in an Umayyad castle, a Buddhist scroll on the planetary week and the two extra planets of demonic origin from Japan, a palace of justice in Padua, a chapel of the Medici family in Florence, and an enigmatic, anonymous celestial map of the northern hemisphere from Iran. Others focus on a single theme (Andreas Winkler, Stamatina Mastorakou, Ilaria Bultrighini, Fabio Spadini, Kocku von Stuckrad, Antonio Panaino, Monika Zin, Dieter Blume, Mandira Sharma, Günther Oestmann, Elsa Dikkes, Anna Jerratsch, and Aida Alavi).

The first six themes cover the ancient world with studies on coffins from Ptolemaic Egypt, depictions of Urania and Aratus with a globe from Roman Gaul and possibly Coptic Egypt, the pictorial immortalization of the planetary week through their ruling deities in the Roman empire, the use of zodiac images in Roman politics, the inclusion of zodiac imagery in mosaics of Roman synagogues, and the interpretation of the complex imagery on five late Sasanian or early Islamic silver plates. The following seven themes start with the presence of the sun and moon in Buddhist cave paintings in and around Kucha at the north-eastern trajectory of the Tarim Basin, and two further themes from societies in Asia – the nine planets (called *navagraha*) worshipped in Hindu communities and the transformation of the Goatfish (Capricorn) into a dancing goat on several objects from Safavid Iran. The remaining four themes in this group focus on developments in Occidental Christian Europe – the renewal of astronomy in the Carolingian empire, the construction, and functions of mechanical clocks with astral imagery in towns near the Baltic Sea, the acquisition and usage of celestial cups by an early modern Danish king and his queen, and the different depictions of comets and their meaning in printed German pamphlets and broadsides. Three authors provide a long-term overview of several types of objects and their astral images in Mesopotamia (John Steele), Slavonic cul-

tures in eastern Europe (Florentina Badalanova Geller), and Turco-Islamic dynasties in Central and West Asia (Anna Caiozzo). One author (Mendel) accepted our invitation to share her research journey through the remains of an Egyptian temple in Athribis, which led to her reconstruction of the temple's outer ceilings and their astral images on paper. Three authors take us on a journey through the academic history of the objects: synagogues in Roman Palestine (von Stuckrad), a pre-Islamic silver plate probably from eastern Iran as well as a rock relief in western Iran (Panaino), and an early Islamic castle in the Umayyad caliphate (Leal), to arrive at new proposals for interpreting these objects. In the case of the Iranian silver plate, four further examples located in collections and auction houses in Great Britain and the United States are for the first time analysed and compared with the much more famous plate that inspired the chapter. These 'newly discovered' plates show that a richer pictorial repertoire was available to the artisans who crafted the objects than originally believed.

Despite their authors' different approaches and styles of narration, all chapters in this book are united in their focus on analysing material objects, discussing their astral images, and reflecting on the objects' functions, meanings, or identities. Generally speaking, texts served as resources for additional information but not as primary research objects. Badalanova-Geller's overview of astral knowledge and its imagery in Slavonic eastern Europe is an exception, because she considers the texts on planets and zodiac signs as indispensable for understanding the later unfolding of their visualization in manuscripts and churches. The chapters on Turco-Islamic astral imagery (Caiozzo) and a Japanese scroll on the planetary week (Kotyk) are both boundary cases as texts play a larger role in the interpretation of the objects. Caiozzo analyses miniatures in two texts in addition to a metal bowl, while Kotyk presents an illuminated manuscript in its entirety. To abstain from the joint analysis of image and text in such cases would be methodologically unsound.

The analysis of non-textual material objects and their pictorial properties can constitute a major challenge. 'Reading' such objects and determining the knowledge about the heavens 'inscribed' in them, demands further skills beyond those needed when editing, translating, and interpreting scholarly texts about models of the universe, the calculation of planetary coordinates, or the casting of a horoscope. Several authors (Steele, Mastorakou, von Stuckrad, Panaino, Leal, Caiozzo, Sharma, and Jerratsch) reflect in depth and in diverse ways on the methodological challenges of such an analysis of astral knowledge and its social practices. They show that the skills acquired in textual studies can be fruitfully applied to the analysis of material objects and their imagery.

Most chapters in this book leave no doubt, however, that an analysis of non-textual objects without texts to provide clues to the objects' contexts rarely yields fully satisfying answers. It can even lead one astray. But a lack of familiarity with pictorial traditions and symbols and their meanings can lead to the same unfortunate result. A good example is the previously misinterpreted anonymous celestial map from Iran found in Bonhams's auction catalogue. It was mis-identi-

fied as coming from the Timurid period, that is, the fourteenth or fifteenth century, while all the elements of the map – its depiction of the constellations, the presence of several new constellations, and its colours – speak clearly for a much later date (Brentjes). This point is affirmed in the discussion of the interpretive options available for the five plates probably produced in the eastern regions of pre-Islamic and early Islamic Iran (Panaino), the analysis of the images of the sun and the moon in the Buddhist murals of Kucha (Zin), the interpretation of the symbolism in a special miniature illuminating Nīẓāmī's fable of the *Seven Beauties* (Caiozzo), and the identification of the meaning of the dancing goat replacing the image of the Goatfish in Safavid and other images of the zodiac (Alavi).

The second thread connecting many contributions in this book is formed by the cross-cultural aspects that link an object, its image(s), or the respective academic debates with those in another chapter. References to such connections are either made explicitly or the chapter where such a related image or object can be found is mentioned.

The earliest cross-cultural object described in this book is a temple at Athribis studied by Mendel. The latest discussed cross-cultural astral object is the anonymous celestial map of the northern hemisphere produced in late Safavid Iran, as Brentjes demonstrates. It combines recent astral and pictorial knowledge from Occidental Christian Europe with the Graeco-Islamic iconography of the Ptolemaic constellations substantially shaped by the Persian astral scholar ʿAbd al-Raḥmān al-Ṣūfī. Other objects with cross-cultural components are discussed in the chapter on four Egyptian coffins (Winkler), in the overview of eastern European texts and churches (Badalanova Geller), in the chapter on the Sasanian investiture scene carved into a rock (Panaino), in the chapter on the sauna in the Umayyad castle (Leal), in the chapter on the ninth-century Japanese scroll on the planetary week (Kotyk), or in the chapters on Carolingian manuscripts and the palace of justice in Padua (Blume).

The cross-cultural connections between the astral imagery presented in this book – and from other sources that are not discussed here – criss-crossed several transregional spaces. Objects with different representations of the same astral theme undoubtably arrived in those far apart regions more than once, engendering a multitude of pictorial forms. This applies above all to solar, lunar, and planetary deities, the zodiac signs, and the planetary week, which, as already mentioned earlier, reached Japan in the East and transalpine Europe in the West, covering most regions in between, albeit at different times. The deities arrived at their new destinations in the Mediterranean and the Carolingian kingdom in the West and Central Asia, north-western India, China, and Japan in the East at various times between possibly the fifth century BCE and the ninth century CE. The concept of the zodiac and the visualization of the twelve signs moved from Mesopotamia towards the Mediterranean (Egypt, Greece, Rome), the Arabian Peninsula, and Asia Minor probably between the third century BCE and the first century CE. Its first indisputable pictorial traces appear in India in the fifth century, in eastern Central Asia between the sixth and the first half of the eighth centu-

ry and in China and Japan from the early eighth and the ninth centuries. Decans and lunar mansions moved across smaller, but still huge stretches of territory up to the Tarim Basin in the East and northern Europe in the West in time horizons similar to those of the zodiac.

The carriers of these migrations are not always known, but four groups seem to have been primarily involved – merchants, craftsmen (in particular, makers of seals and coins, but probably also stone masons and painters, and perhaps even instrument makers), clerics, and envoys. In later periods, scholars were a major group who worked with astral imagery in texts on astronomy, astrology, divination, or magic. The social boundaries between makers of astral instruments, such as globes or sundials, and scholars were not always as rigid as we often imagine. The artisan who produced some of the clocks in cities like Stralsund, discussed by Günther Oestmann, knew about Ptolemy, Abū Maʿshar, or Alfonso X, the king of Castile and León, also known as Alfonso the Wise. In Islamic societies instrument makers wrote texts about the things they produced, but also about other astronomical topics. Similar developments took place in various cities in Occidental Christian Europe in the sixteenth century, bridging the gap between theoretically educated scholars and practically trained craftsmen. In this manner, different skills, and forms of knowledge, including the art of astral imagery, flowed among social groups.

In South and East Asia, Buddhist monks travelled between India, Central Asia, Tibet, China, and Japan from about the fifth to the tenth or eleventh centuries, if not longer. In several cases, they brought scrolls with them that contained different culturally mixed depictions of zodiac signs, planetary deities, and lunar mansions as Kotyk shows in his chapter about the ninth-century Japanese scroll on the planetary week. With the eastward expansion of Islamic societies from the Arabian Peninsula to Central Asia and India and the establishment of Turkic dynasties, the depiction of astral motifs on different kinds of material objects flourished, incorporating Turkic and, in at least one case, also Indian features, as Caiozzo explains. In the early modern period, the intensifying eastward travel of merchants, scholars, envoys, missionaries, and adventurers from Occidental Christian Europe brought celestial maps, globes, and books with new constellations and other forms of astral knowledge to diverse Asian countries, which were depicted, often in modified form, on locally produced objects as Brentjes argues in the case of Iran.

Cooperating across the boundaries of different historical disciplines enabled all contributors to this book to profit from the specific disciplinary skills and expertise of their colleagues. Hence, we thank all participants in the project for their mutual respect, support, and willingness to think outside of their disciplinary comfort zones. We very much hope that the readers of our chapters can glean the positive impact that this cross-disciplinary exchange exercised on them. Last but not least, a particularly outstanding feature of this book is its inclusion of images of all of the selected objects and many of those they are compared with for purposes of analysis and identification.