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Performative Aspects of Assyrian Celestial Divination and Babylonian Astronomical Diaries

Abstract: This contribution explores performative aspects of Assyrian celestial divination and Babylonian astronomical diaries and related texts during the first millennium BCE. While the sources for Assyrian celestial divination contain much evidence about observational and ritual performances, astronomical diaries and related texts are mainly concerned with observation and prediction. It is argued that the Assyrian evidence can shed light on some poorly documented performative aspects of astronomical practices in Babylon.

1 Introduction

Inspired by theatre studies, the humanities have experienced a performative turn since the 1980s. In a parallel development, research on Mesopotamian scholarship shifted towards an approach focused on actors and their networks, practices and contexts.[1] Performative aspects of Mesopotamian culture have thus far been addressed primarily in relation to practices that are inherently performative, such as rituals,[2] funerary practices,[3] healing practices,[4] cultic songs and music.[5] In other areas of Mesopotamian scholarship, performances have not received much attention. The present paper explores performative aspects of the astral sciences as practised in Assyria and Babylonia during the first millennium BCE. In Mesopotamian religion and scholarship, the Moon, the Sun, the planets and the stars were all conceived of as deities or manifestations of deities.[6] Adapting a definition of performativity proposed by Richard Schechner to the Mesopotamian setting,[7] performances are understood as bodily activi-

1 Rochberg 2004; Robson 2019a.
2 See Pongratz-Leisten 1994; Schwemer 2011; Parpola 2017; and Krul 2018.
3 Laneri 2006.
4 Johnson 2020.
5 See Mirelman 2010; Gabbay and Mirelman 2011; Löhnert 2011; Volk 2006; and Ziegler 2011.
6 Rochberg 2004.
7 Schechner 1988, 20.

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ties undertaken in the presence of at least one other person or *divine entity*. The advantage of this definition is that it allows activities performed by scholars, rituals addressed at astral deities and astronomical observations by single scholars to be approached within the same framework. The relatively well-documented performances of the practitioners of celestial divination at the Neo-Assyrian court (seventh century BCE) are explored first before turning to the production of astronomical diaries and related texts in Seleucid and Parthian Babylon (*c*. 330 BCE – 75 CE). The evidence for performances in these corpora is complementary in some respects. The Assyrian sources inform us mainly about performances in observation, interpretation and ritual practice. The Babylonian sources are concerned with observation and prediction, but reveal little about their performance. I propose that the Assyrian sources can shed light on some poorly documented performative aspects of the astronomical practices at Babylon.

2 Performances in celestial divination at the Neo-Assyrian court

The richest evidence of performative aspects of Mesopotamian astral science is contained in the letters and reports which the practitioners of celestial divination, i.e. 'astronomers',[8] sent to the Assyrian kings at Niniveh (*c*. 680–650 BCE).[9] Underlying this practice was the assumption that celestial phenomena are a form of 'heavenly writing' in which the gods reveal their decisions about future events.[10] The king used the predictions inferred from celestial signs to guide his actions and negotiate a favourable future for himself and his country.[11] If a sign was unfavourable, rituals existed to appease the gods and annul the prediction. The astronomers referred to their service as 'carrying out the watch of the king'.

8 Mesopotamian scholars of the astral sciences are referred to as astronomers here regardless of whether they practised celestial divination, astronomical observation, horoscopic astrology or other forms of astral science.

9 The sources cover parts of the reigns of Esarhaddon and Assurbanipal. Regarding the astronomers' reports, see Hunger 1992. See Parpola 1993 on their letters. For reports and letters about extispicy, see Starr 1990. For more on divination at the court, see Maul 2018, and for more on scholarly communities, see Robson 2019a.

10 Rochberg 2004.

11 Maul 2018.

It is important to note that the Akkadian verb 'to watch' (*naṣāru*) covers both visual perception and protection, as Simo Parpola has described:[12]

> A plain rendering is incapable of expressing the full meaning of the phrase ('watch of the king'), which involved watching, guarding and protecting the king [...]. This the court scholars did by watching for and interpreting signs that the gods sent and advising the king how these signs should be reacted to; by guarding the king's behaviour in cultic and other areas to prevent him from becoming cultically impure or from performing some task on an inauspicious day; by protecting the king from portended evil and divine wrath through apotropaic rituals [...]; [and] by restoring the harmony between the king and the gods through ritual purification ceremonies.

'Carrying out the watch of the king' was therefore an inherently performative practice.[13] It was performed in teams of collaborating scholars headed by a chief scholar with access to the king.[14] Four kinds of performances alluded to in the letters and reports are briefly addressed for the present purpose. First, the observations themselves. They were often performed by single scholars, presumably at home, but some reports mention joint observations, as in the following report by chief scholar Issar-šumu-ēreš:[15]

> [As to] what the king, my lord wrote to me: 'The clouds were dense, how did you observe that the gods [moon and sun] saw each other [in opposition]?' They dispersed before daybreak; when he [the moon god Sin] whom the king, my lord, knows, revealed himself, we saw where Sin was standing. It amounts to an actual observation. Now, does not the king, my lord, [indeed] hear that they saw each other on the 14th?

Issar-šumu-ēreš is replying to a letter in which the king questioned the reliability of an observation. He affirms its validity, stressing that he was not the only witness. Joint observations are also mentioned in a report by a scholar called Balasî,[16] who had a disagreement with his associate Nabû-aḫḫe-ēriba:[17]

> Concerning Mercury, about which the king my lord wrote to me: yesterday Issar-šumu-ēreš had an argument with Nabû-aḫḫe-ēriba in the palace. Later, at night, they went and all made observations; they saw [it] and were satisfied. From Balasî.

12 Parpola 1993, xx–xxi.

13 For comprehensive accounts of the practice of celestial divination at the Assyrian court, see Koch 2015; Maul 2018; and Robson 2019a.

14 Parpola 1993, xxv–xxvii.

15 Hunger 1992, no. 21.

16 He was the scholarly advisor and teacher of crown prince Assurbanipal (Parpola 1993, xxv).

17 Hunger 1992, no. 83.

As in legal practice, reports based on testimony by multiple witnesses were more authoritative than reports by a single witness. Moreover, each scholar could scrutinise the performance of the other, and disagreements could be resolved *in situ*.

Uncovering the meaning of the signs was primarily a text-based operation which required profound knowledge of divinatory literature, in particular compendia of omens, i.e. collections of statements of the kind 'if P, then Q'. In their reports, the scholars usually quote a selection of omens from these compendia, rather than describing the phenomena in their own words. This reflects the authority of the omen compendia, which had the status of divinely revealed knowledge. The astronomers were called 'scribes of *Enūma Anu Enlil*', after the main compendium of celestial omens entitled *Enūma Anu Enlil* ('When Anu and Enlil'). It comprised about seventy tablets arranged in more or less coherent groups dedicated to lunar, solar, meteorological, planetary and stellar phenomena.[18] After the omens that were considered relevant for interpreting an observed phenomenon were identified, they were compared and evaluated, which could require the use of commentaries and consultations with colleagues. It was also common practice to seek confirmation or annulment of the celestial signs through extispicy (divination by inspecting the entrails of sacrificed animals). In this case, the extispicy specialist (*barû*) addressed a prayer to the sun god and divine judge Šamaš, asking him to write down a verdict in a sheep's body. The signs on the sheep's liver were then interpreted and their predictions compared with those inferred from the celestial signs.[19]

It was not always sufficient to pass on the information to the king in written form. A third type of performance was a consultation in which scholars at the court reported their interpretations to the king and advised him about possible action to take. Sometimes the king had to be convinced with the help of authoritative texts, as mentioned in the following report by chief scholar Issar-šumu-ēreš:[20]

> [Omen quotations concerning a full moon.] Let them bring in that writing board of Enūma Anu Enlil which we wrote, let the king, my lord, have a look. Also, let them give us the Akkadian writing board of the king; the 'Three Stars Each' should be drawn on it. A courtier should be appointed to open the seal, to supervise the drawing.

18 Regarding the order of the tablets, see Fincke 2001. For more on their content, see Koch 2015.

19 Maul 2018.

20 Hunger 1992, no. 19; Robson 2019a, 122.

Some consultations took place in a sacred enclosure by the river called a *qersu*, as mentioned in the following report:[21]

> [To the king, my lord, your servant Nabû-aḫḫē-ēriba. Good health to the k]ing, my lord! May [Nabû] and Marduk bless the king, my lord! Concerning the report on the eclipse of [the moon god] Sin about which the king, my lord, wrote to me – they used to receive and introduce all the reports of the scribes of Enūma Anu Enlil into the presence of the father of the king, my lord. Afterwards, a man whom the father of the king, my lord, knew used to read them to the king in a *qersu* on the river bank. Nowadays it should be done as it suits the king, my lord.

This underscores the ritual nature of the consultation and the divine origin of the message that was conveyed to the king.

Finally, there are ritual and other performances aimed at counteracting unfavourable predictions or protecting the king. Since the astronomers were also competent in various ritual disciplines,[22] they sometimes performed these rituals themselves, as mentioned in a report by the scholar Adad-šumu-uṣur:[23]

> As to the ritual about which the king my lord spoke, we shall perform it this night of the 22nd day before Dilbat [Venus] and the Arrow [Sirius]; the cultic singers [*kalû*] will also perform. If [the weather god] Adad thunders in the middle of the Bull (Taurus), the king will conquer a country not belonging to him.

More often the scholars advised the king to have some ritual performed by unnamed specialists.[24] The most common rituals against unfavourable signs are known as *namburbû*, which involved symbolic ritual performances as well as recitations.[25] In the case of a lunar or solar eclipse, the substitute king ritual could be enacted, as is mentioned in several letters and reports from Niniveh.[26]

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21 Parpola 1993, 57 (no. 76); Robson 2019a, 105. The *qersu* also played a role during the substitute king ritual, cf. Parpola 1993, 168 (no. 210): 'The (king as) "farmer" (cover name) goes to the *qersu*, enters the reed hut, sits down, returns from the *qersu*'.

22 Robson 2019a, 109.

23 Hunger 1992, no. 163.

24 See, for instance, Hunger 1992, no. 288, a report about the conjunction of Mars and Jupiter: 'This is a bad sign for all lands. Let the king my lord perform a *namburbû* and so make its evil pass by'.

25 Maul 1994.

26 An overview of the Mesopotamian evidence for this ritual can be found in Huber 2005, 342–356.

3 Astronomical diaries and related texts in Seleucid and Parthian Babylon

Around 1,000 fragments of astronomical diaries and related texts dating between *c*. 650 BCE and 75 CE were excavated near Babylon's main temple Esagila, sanctuary of the supreme god Marduk (Bel). The astronomers who wrote these texts were called 'scribes of *Enūma Anu Enlil*' as in earlier times. No private correspondence of the Babylonian astronomers comparable to the letters and reports from Niniveh is available, but some information about their institutional, professional and private lives can be gleaned from colophons and from administrative documents from temple archives. They were employed as priests at the Esagila and received a fixed income for their astronomical services (see below). They belonged to a small cluster of scholarly families in which the priestly and scholarly professions were passed on from father to son. Having received a scribal, priestly and scholarly education and being employed at Babylon's main temple, they were also competent in ritual and cultic affairs. The authors of the diaries and related texts were steeped in a cultic tradition with strict and elaborate rules regarding what counts as appropriate and correct performance. Moreover, they carried out their astronomical activities in a setting where all kinds of ritual performances were enacted on a daily basis, probably with their own involvement. It seems plausible that this affected their performance of astronomical observations.

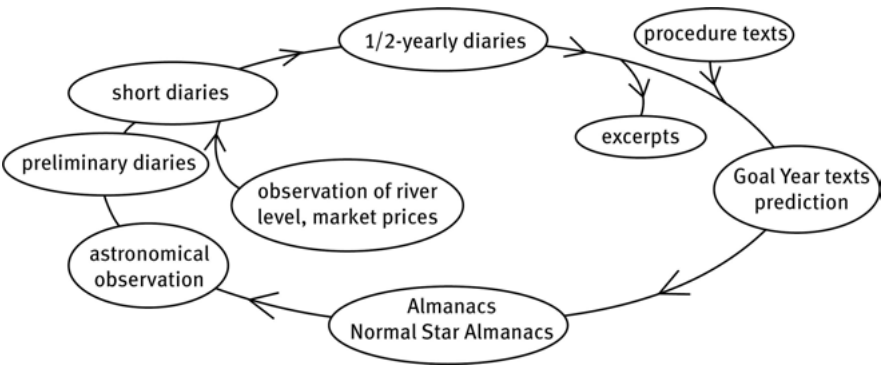

Fig. 1: Schematic representation of the production cycle of astronomical diaries and related texts (the lunar and planetary excerpts, most of which contain a selection of data for a single planet for up to several decades, have not been discussed in this article).

The present exploration focuses on the Seleucid and Parthian eras (*c*. 250 BCE – 75 CE) when all of the known textual genres of the diaries and related texts are attested, in particular short-term reports known as preliminary diaries and short diaries, half-yearly diaries, Goal-Year texts, almanacs, Normal-Star almanacs, and procedure texts with Goal-Year rules. As Fig. 1 shows, they are products of a cycle of operations involving both observation and prediction. What kind of performances are attested or implied in the different stages of the production cycle? We may start with short-term reports, which were the source for the diaries. Compared to half-yearly diaries, relatively few have survived because they were discarded once their content had been processed. In his pioneering study, Yasuyuki Mitsuma distinguishes two types of short-term reports.[27] 'Preliminary diaries' report astronomical and weather data, sometimes also the river level, for typically a few days. 'Short diaries' usually contain all categories of data known from the half-yearly diaries, including the market rates of agricultural commodities, and historical and local events, for intervals of at most *c*. two months. Both 'preliminary diaries' and 'short diaries' covering up to a few days are often written with progressively shallower signs since the tablet became more difficult to inscribe as the clay dried up from day to day. It follows that they were written as the data was collected.[28] Since the observations were made at the beginning and end of the night, the scholars must have used an artificial source of light and a water clock to measure time intervals and an instrument – perhaps one similar to a medieval Jacob's staff – to measure the distance from the Moon or the planets to nearby fixed stars.

The astronomical watch was a thoroughly prepared and controlled procedure. Most phenomena that were reported were selected for observation and predicted in advance. Only a few unexpected or unpredictable phenomena were reported.[29] Astronomical phenomena that were expected, but could not be observed due to bad weather were replaced by predictions. This is attested in the earliest known diaries from the sixth century BCE. Modern scholarship has not yet reflected on the fact that such predictions are also present in preliminary diaries. A cursory inspection of the extant preliminary diaries[30] suggests that no predictable phenomena are omitted from these texts when bad weather prevented their

27 Mitsuma 2015.

28 It cannot be ruled out that the extant preliminary diaries were copied from original reports written on wooden boards inlaid with wax. None have survived from Babylon, but some half-yearly diaries do mention that they were copied from a wooden board.

29 Sachs and Hunger 1988.

30 Mitsuma 2015.

observation. The following quotation from a preliminary diary for Seleucid Era (SE) year 116, month II, days 10–17 (194 BCE) may serve as an example:[31]

> Year [SE] 116. [...] Night of the 13th, moonrise to sunset 10;30 (UŠ); clouds, I did not watch. [...] The 13th [...] Mercury's first appearance in the west in Aries; it was bright, high, sunset to setting of Mercury 15 [UŠ]; [theoretical] first appearance on the 11th.

On day 13, near full moon, the time from moonrise to sunset is reported as 10;30 UŠ (= 42 minutes), but is marked as 'not observed' (literally, 'I did not watch'). It follows that the reported number was computed. Mercury's first appearance in the evening is reported on that same day, along with the theoretical date of the phenomenon, day 11. It follows that predictive texts were consulted before and perhaps during the observation so that the astronomer knew which phenomena to observe, where to look and what to report if the expected phenomena could not be observed. Texts known as 'almanacs' and 'Normal Star almanacs' were almost certainly the source of these predictions (see below). It follows that in addition to a water clock, a measuring stick, a source of light and a clay tablet or wooden board inlaid with wax, the astronomers may also have carried along a predictive almanac and/or Normal Star almanac. This would, in turn, suggest that the astronomers had assistants with them or observed the stars in pairs, but there is no actual evidence to support this.

Half-yearly diaries, which are the most widely preserved subgenre, usually contain a highly stable selection of astronomical, meteorological, economic and historical data spanning around half a calendar year, i.e. six or seven months.[32] Their compilation involved comparing, evaluating and copying short diaries kept by various scholars. This must have been done in a location where the short diaries were collected, presumably in the temple compound. The half-yearly diaries were produced for long-term storage in a reference library. The range of months in the diary was written on the upper edge of the tablet using the phrase 'Regular watch from month M to month N of year Y of (King) NN'. This allowed the scholars to retrieve a diary easily if the tablets were placed vertically on shelves or in brick niches, as is attested for some Babylonian libraries.

As mentioned above, most of the reported astronomical phenomena were also predicted. The diaries were indirectly the source of these predictions. The underlying method, known as the Goal-Year method in modern scholarship, is based on the principle that lunar and planetary phenomena return to nearly the

31 Sachs and Hunger 1989, no. 195E.

32 For editions of the astronomical diaries, see Sachs and Hunger 1988; 1989; and 1996. See Steele 2019 for an overview of their development.

same celestial position and calendar date after a characteristic Goal-Year period. For example, Venus phenomena get repeated after ninety-nine months, corresponding to approximately eight years. By copying Venus phenomena from a diary preceding a future month by ninety-nine months, Venus phenomena can be predicted for that month.[33] By the same principle, phenomena relating to the other planets, lunar eclipses, the appearance of the first crescent and so-called Lunar Six intervals were predicted, each with its own period expressed in months. The predictions that are incorporated in diaries from the sixth century BCE onwards were probably obtained with such methods.

From the third century onwards, lunar and planetary predictions are attested on special tablets known as Goal-Year texts.[34] Each Goal-Year prediction of an astronomical phenomenon required a record of the same phenomenon from an earlier year. This partly explains why the content of diaries was stable over many centuries. However, no Goal-Year method appears to have been available for some phenomena that were routinely reported, in particular the frequent Normal Star passages of the Moon, since they were not copied to Goal-Year texts. By *c.* 330 BCE, Babylonian scholars were predicting zodiacal positions of the Moon using the methods of mathematical astronomy, but these predictions do not seem to have been included in diaries and related texts. If the Moon's passage by a Normal Star could not be observed due to cloudy weather, this passage remained unreported, even in diaries written after 330 BCE.

The lunar and planetary data in Goal-Year texts is actually made up of direct quotations from half-yearly diaries. The enormous amount of work underlying the production of a single Goal-Year text is evident from the fact that its content originates from seventeen different half-yearly diaries.[35] Several features indicate that Goal-Year texts represent an intermediate stage of prediction. Their data is not conveniently arranged by the months of the Goal Year, but by planet – in six sections, and chronologically in each one. Due to intercalation, some Babylonian years contain thirteen months instead of the usual twelve. Using the example of the ninety-nine-month period for Venus, this means that the Goal-Year period sometimes separates two identical calendar months eight years apart and sometimes two shifted ones. It may therefore happen that the

33 Steele 2011.

34 For editions of the Goal-Year texts, see Hunger 2006.

35 Distinct Goal-Year periods were used for Normal Star passages and synodic phenomena for Mars and Jupiter, while a single period was used for the other planets and the Moon. This was the Saros period of 223 months for the Moon (approx. 18 years), but some lunar predictions also relied on data preceding the months of the Goal Year by 229 months. Each Goal-Year text therefore contains quotations from $2 \times 4 + 4 \times 2 + 1 = 17$ different half-yearly diaries.

Venus section begins with quotations from month XII of the year preceding the Goal Year by nine years because that month corresponds to month I of the Goal Year, and analogously for the other months. Thirdly, the diary passages that were copied to Goal-Year texts still include accompanying weather phenomena, even though they were not considered to be predictable with the same method as planetary and lunar phenomena.[36]

In the next stage, predictive almanacs and Normal Star almanacs were generated from the Goal-Year texts.[37] For the present purpose, suffice it to say that each almanac or Normal Star almanac contained data from one Goal-Year text re-arranged chronologically from months I to XII or XII_2 of the Goal Year.[38] If necessary, this involved replacing the original month names by the corresponding shifted months of the Goal Year. Accompanying weather reports were deleted and small corrections were made to the dates. The end products closed the production cycle and are likely to have guided the scholars in making their observations throughout the year.

As will be apparent, the production of astronomical diaries and related texts required a complex set of skills: scribal, practical, astronomical, computational, performative, administrative and collaborative. Compared to celestial divination at the Neo-Assyrian court, very little explicit textual evidence of the underlying practices and procedures is available today. Even though instructional texts played an increasing role in Late Babylonian scholarship,[39] the only known examples of such texts with a connection to the production cycle are several procedure texts with Goal-Year rules[40] (Fig. 1). This may indicate that some of the procedural knowledge underlying the production of diaries and related texts was not written down, but communicated orally and performatively, with experienced scholars explaining and demonstrating to junior scholars how to do things in the proper way. A rare insight into performative aspects of

36 Ossendrijver 2020.

37 See Hunger 2014 for editions of the almanacs and Normal Star almanacs. On the relationship between Goal-Year texts, almanacs and Normal Star almanacs, see Hunger 1999; Hunger and Pingree 1999, 139–182; Gray and Steele 2008. The exact set of procedures by which almanacs and Normal Star almanacs were compiled from Goal-Year texts and other sources has yet to be reconstructed.

38 Intercalation, i.e. the insertion of an additional month, could also trigger a renaming of the months. In the period of concern the additional month was either a second month XII, conventionally denoted XII_2, or a second month VI, conventionally denoted VI_2.

39 Ossendrijver 2015.

40 For Goal-Year procedure texts, see Brack-Bernsen and Hunger 2002; 2005–2006; 2008; and Britton 2002, 59–61.

the production cycle is provided by several administrative texts from the second century BCE documenting the decisions of the council of the Esagila. A tablet from 118 BCE reports their decision about the case of an astronomer who had come forward to claim a position at the temple:[41]

> The assembly of the Esagila held council and declared as follows: 'In month X, on day 15, year 129 [of the Arsacid Era], which is year 193 [of the Seleucid Era], we drew up a memorandum concerning our holdings, [namely] 1 mina of silver of Babylon standard and the arable land of Bēl-aba-uṣur, scribe of *Enūma Anu Enlil*, son of Bēl-rēmannu, scribe of *Enūma Anu Enlil*, which he received for keeping the watch, [and which] we had [subsequently] assigned to Nabû-apla-uṣur, cultic singer [*kalû*], scribe of *Enūma Anu Enlil*, son of Nabû-mušētiq-udda. Now Bēl-uṣuršu, scribe of *Enūma Anu Enlil*, son of the aforementioned Bēl-aba-uṣur, has come forward and demonstrated to us that he is capable of keeping the watch and we have seen ourselves that he is capable of everything [concerning] the watch [...]. We approached the aforementioned Nabû-apla-uṣur to ask him to relinquish the field and the 1 mina of silver, the income of Bēl-aba-uṣur, the father of Bēl-uṣuršu [...]. From this year onwards, we shall pay him annually from our silver for keeping the watch and delivering the computed tables and the *mešḫu* texts together with Lābaši, Murānu and Marduk-šāpik-zēri, the sons of Bēl-bullissu, [with] Bēl-aḫḫē-uṣur and Nabû-mušētiq-uddi, the sons of Itti-Marduk-balāṭu, and with the other scribes of *Enūma Anu Enlil*'.

We learn that Bēl-uṣuršu's father had been employed as an astronomer. But in the meantime, another individual, Nabû-apla-uṣur, had taken over his position, which Bēl-uṣuršu now claimed for himself. In order to prove his suitability for it, he performed an observation before the council, which concluded that he was capable of 'everything concerning keeping the watch' and transferred the position to him. Apart from reporting observations, he was required to produce 'computed tables' – a reference to mathematical astronomy – and '*mešḫu*-texts' (the technical term for almanacs and/or Normal Star almanacs) together with his colleagues. It is not clear whether his skill in producing the predictive texts was also examined, although 'everything concerning keeping the watch' could be taken as covering the entire production cycle, including Goal-Year texts, almanacs, and Normal Star almanacs. Presumably, the astronomers also held regular meetings where preliminary diaries were collected, the production cycle was coordinated, observation schedules were decided and scribal and computational tasks were assigned, but none of these organisational tasks are documented in surviving texts.

41 BM 35559 (CT 49 144). Translation based on the edition by Rochberg 2000. For the authorship of the astronomical diaries see also Robson 2019b.

A comparison between the Assyrian and Babylonian sources discussed above reveals some notable differences. For one thing, prediction played an insignificant role in Assyrian celestial divination compared to Babylonian astral science.[42] Conversely, the astronomical diaries and related texts are largely devoid of references to the ominous significance of the phenomena that were observed and predicted. Nevertheless, predicting the future by means of celestial divination and more recent forms of astrology was almost certainly the main purpose of the astronomical diaries and related texts. This is not directly evidenced in the diaries and related texts, but it is in separate genres such as Late Babylonian copies of the omen compendia, horoscopes[43] and other innovative astrological compositions, many of which remain to be investigated.

In spite of a lack of textual evidence, it is generally assumed that celestial divination was practised at the Babylonian court after the fall of Niniveh (in 611 BCE), which suggests that at least some of those who compiled astronomical diaries were engaged in these activities. Even after the Persian conquest of Babylonia in 539 BCE, when native Mesopotamian kingship disappeared, Babylonian astronomers are said to have offered their services to their foreign kings, including Alexander the Great.[44] Little is known about the institutional and social setting of horoscopic astrology, which emerged in the fifth century BCE. Some Babylonian temple astronomers apparently used their predictions to produce horoscopes for private citizens.[45] Since the fate of the newborn was not usually written down along with the horoscope, this information must have been communicated in a private consultation. We can only speculate about the performative nature of these consultations. Perhaps they were modelled on the astrological consultations conducted at the king's court.

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