

SCHOLARLY CONCEPTIONS AND QUANTIFICATIONS OF TIME IN ASSYRIA AND BABYLONIA, c.750–250 BCE

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We owe many basic concepts and quantifications of time, from the twelve-month year to the sixty-second minute, to the scholars of ancient Iraq. My aim here is not to recount the teleological story of how those ideas moved through time and space from them to us, but rather to explore time as it is represented in scholarly writings of all sorts in the historical record. I shall focus primarily on two bodies of evidence: one from the cities of Ashur, Kalhu, and Nineveh, successive capitals of Assyria – northern Iraq, in the region of modern-day Mosul – from about 750 to 612 BCE; and the other from the Babylonian cities of Babylon and Uruk, to the south of Baghdad, in around 500–250 BCE.

Assyria in the mid-8th to late 7th centuries was at the height of its imperial power. It controlled almost all of the Middle East (including Egypt for two short periods), from which it earned phenomenal income, in both taxation and war booty. Much of that wealth was invested in the upkeep, expansion, and replacement of three urban centres in its heartland on the Tigris River. First and

foremost was Ashur, the historic religious and cultural capital of the empire, after which its tutelary deity was named. In 879 BCE king Ashurnasirpal II moved the political capital north to Kalhu, and just before 700 Sennacherib relocated to Nineveh. Before these cities fell to the Medes and the Babylonians as the empire collapsed in 614–612 BCE all three were the focus of lavish spending, particularly on their temples and palaces—and on the personnel attached to those institutions.

The Assyrian court comprised not only political and military officials and advisers but also men of learning, *ummanu*, whose fields of expertise were vast, ranging from religion to science, from medicine to magic. These elite literati depended almost entirely, it seems, on royal patronage to keep them in housing and employment, creating a highly competitive atmosphere which drove intellectual innovation as they fought among themselves for preferment. As the rulers were particularly concerned with determining the gods' will by means of terrestrial and celestial omens, there were especially strong motives to improve the predictability of key celestial events (Leichty 1993; Brown 2000a:33–52). Lunar and solar eclipses were particularly portentous for king and country. The scholars of celestial omens held the title *tupshar enuma anu ellil* ("scribe of 'When the gods Anu and Ellil'"), after the first line of the major compilation of omens, which ran to 70 or more tablets and is so vast that it still has not been published in its entirety (Rochberg 2000; Hunger and Pingree 1999:12–20, 32–50).

The sudden destruction of the scholars' homes and workplaces has left us with their personal and official libraries of scholarly works—some newly composed, some carefully copied from ancient originals, some recast or commented upon (Pedersén 1998:132–65). They range from historical and historiographical works to literary and mythological compositions, from hymns and ritual instructions to medical and astronomical compendia. The palaces have also yielded their reports to, and correspondence with, their kingly patrons, giving unparalleled opportunities to compare

the written tradition with day-to-day praxis (Starr 1990; Hunger 1992; Parpola 1993; Cole and Machinist 1998).

All that comes down to us was written on clay tablets using the highly complex cuneiform script, in the languages of Akkadian (an indirect relative of Hebrew and Arabic) and Sumerian (which has no known linguistic relatives). This cluster of writing practices had been in use since the first urbanization of Iraq in the late 4th millennium BCE, but they were by now on their way out of both spoken and written currency. Aramaic, which was rapidly replacing them, had the massive communicative advantage of an alphabetic script, but from our perspective the insuperable disadvantage of perishable media. Clay tablets, however, survive in the hundreds of thousands—probably millions—so we are fortunate indeed that ancient scholars continued to employ the traditional medium of cuneiform scholarship.

The Assyrians may have considered themselves rulers of the known universe but they were very conscious of their cultural dependence on their southern neighbor Babylonia, from which almost all of their traditions, writings, and belief systems ultimately stemmed. At times the Assyrian kings even ordered raids on Babylonian libraries, bringing back cultural booty in the form of cuneiform tablets and Babylonian scribes in fetters (Michalowski 1999). Thus much of the contents of Assyrian scholarship was essentially Babylonian.

The scholarly tradition seems to have been relatively unaffected by the major political reconfigurations of the 610s and even survived the Persian and Seleucid conquests of 539 and 330 BCE more or less unscathed. This may have been because the Assyrian system of court patronage had never extended to Babylonia, where scholars were dependent on the stable institution of the city temple rather than the fickle support of the current king. Indeed, scholarly activity appears to have continued regardless of who was in power: the will of the gods needed to be determined for the good of the land, whatever the political circumstances.

From about 500 BCE onward scholarship at Marduk's temple Esangila in Babylon and at Resh, the sanctuary of the sky-god Anu in Uruk, was increasingly focused toward ever more sophisticated mathematical methods for modelling celestial periodicities so ominous phenomena were completely predictable (Rochberg 1993). Just as earlier in Assyria, cuneiform scholarship was in the hands of a few families of wealthy urbanites, who trained their own sons and the sons of professional colleagues, who all traced their ancestry back to famous scholars of centuries ago. While the title *tupshar enuma anu ellil* was still used occasionally, the preferred professional designations, which ran along familial lines, were *ashipu* ("incantation priest") and *kalu* ("lamentation priest"). In 3rd century Uruk two families most heavily involved in quantitative methods of celestial prediction were the Ekur-zakir family of *ashipus*, and the Sin-leqi-unninni family of *kalus*. The latter group even claimed descent from the late 2nd millennium editor of the *Epic of Gilgamesh* (Beaulieu 2000). Cuneiform scholars were still active in Babylon in the 1st century CE, and perhaps even two centuries after that (Sachs 1976; Geller 1997).

How did the scholars of ancient Babylonia and Assyria conceptualize the past, present, and future of their land? How did they perceive the flow of time? Historians of astronomy have typically depicted them as the first rational scientists of the Western tradition, observing, quantifying, recording, and classifying in order to build sophisticated mathematical models of time on a sound empirical base. Philologists and literary historians, on the other hand, have tended to focus on ancient constructions of the distant and genealogical past. These apparently mutually exclusive concerns are more a reflection of the narrow focus of each of Snow's "two cultures" of modern scholarship--the scientific and the humanistic--than of any ancient reality (Snow 1959). The elite literati of Assyria and Babylonia were the numerati too, and their writings show a much richer, more complex, and at times confusing and contradictory, understanding of time and temporality than earlier studies have

allowed. The approach adopted here may appear eclectic but it simply attempts to replicate the wide-ranging interests of the ancients themselves.

Reconciling Real and Ideal Time

The great Epic of Creation *enuma elish* ("When Above") was recited on the fourth day of the *akitu*, or equinoctial festival, held on the eleven days after the first new moon of the spring equinox at the beginning of the year (Bidmead 2002). At the city of Uruk during the Seleucid period it was held at the autumnal equinox, the midpoint of the year. In Babylonia the god Marduk was both the focal point of the festival and the hero and sole audience of the epic; in Assyria it was Ashur. The equinoctial recital of the *Epic* was not only a marker of passing time; it both described and initiated "the irruption of primordial--and hence dangerous or sacred--time in to mundane time, an irruption that both threaten[ed] and enrich[ed] the cosmic order" (Sommer 2000:82). For on the day of the *akitu* following its performance, Marduk's temple Esangila was ritually destroyed, purified, and rebuilt, symbolizing the abolition and renewal of the whole cosmic order, with the person of the king at its center, after which the king's right to rule was reaffirmed by Marduk (or Ashur) himself.

The *Epic* describes the creation of the world of the gods, in which time passes unquantified, and the hero god's destruction of the forces of chaos and evil in the form of the monstrous sea Tiamat. From her lifeless body he creates the world in which human beings are to dwell. Thus chaos is always immanent in the world, a constant counter-force to the orderliness imposed by Marduk. In the sky he positions the heavenly bodies and sets them in regular motion to define and structure the year:



Figure 3.1 The god Marduk, tutelary deity of Babylon and hero of the Epic of Creation, with his snake-dragon. The image is from the god's own cylinder seal, carved from lapis lazuli and dedicated to him by a Babylonian king of the 9th century BCE. From F. H. Weissbach, *Babylonische Miscellen*. Leipzig: Hinrichs, 1903, fig. 1.

[Marduk] made the positions for the great gods.
 He set up the stars in constellations, their counterparts.
 He designated the year and marked out its divisions,
 Apportioned three stars each to twelve months.
 After he had patterned the days of the year,
 He fixed the position of the Pole Star to mark out their courses,
 So that none of them could go wrong or stray.
 He fixed the positions of Ellil and Ea together with it.
 (Tablet V:1–7; cf. Dalley 1989:255)

In other words, every one of the gods is represented in the sky by a star. The stars are to rotate around the Pole Star—as indeed they appear to do. Because for most of the northern hemisphere of the earth's surface the Pole Star is not directly overhead, the stars that are nearest to it are always visible in the night sky throughout the year, while the band of stars further away appear to rise and set over the year, and there is another group, of southern circumpolar stars, which are never visible in the northern night sky. Marduk chooses 36 of those stars in the middle band as chronological markers, three of which are to rise in each month.

The evidence for this interpretation, which otherwise might appear to be an over-reading of the *Epic*, comes from a genre of scholarly compositions dating to the 1180s BCE and later, whose ancient title was “Three Stars Each”—notice the intertextuality—but are now more prosaically (and erroneously, for they are not navigation aids) called “Astrolabes.” They consist of a month-by-month listing, or sometimes a circular pictorial representation, of constellations, stars, and planets which make their first appearance, or heliacal rising, on the eastern horizon in each of the 12 30-day months of the ideal calendar (of which more below). The horizon is divided into three sectors for this purpose: the Path of Anu, the sky-god (a band of about 35° around due east); the Path of Ea, god of wisdom (to the south of the Path of Anu); and the

Path of Ellil, father of the gods (to the north of Path of Anu). Each "astrolabe" assigns a slightly different group of stars to each Path (an example is given in Table 3.1).

Later astronomical works built upon this scheme, including the widely attested two-tablet compilation of celestial information now known as MUL.APIN ("Plough Star"), which reached its final form by about 700 BCE but was still copied for centuries after that (Hunger and Pingree 1989:271–77). We also see Marduk closely associated with the Pole Star throughout the scholarly tradition, for instance in Astrolabe B: "the red star which stands at the rising of the south wind after the gods of the night have finished their duties and divides the heavens: this star is the Pole Star, Marduk" (section B, ii, 29–32; Horowitz 1998:159).

Marduk's next act in the *Epic of Creation* is to create the moon, giving it detailed instructions on how to demarcate the lunar month:

He made the crescent moon appear, entrusted night (to it)
And designated it the jewel of the night to mark out the
days.

"Go forth every month without fail as a crescent disc,
At the beginning of the month, to wax over the land.
You shall shine with horns to mark out six days;
On the seventh day the disc shall be half.
On the fifteenth day you shall always be in opposition, at the
mid-point of each month.
When the sun faces you from the horizon of heaven,
Wane at the same pace and form in reverse.
Always begin the day of disappearance close to the path of the sun,
And on the [. . .] of the thirtieth day you shall be in
conjunction with the sun a second time."

(Tablet V:12–22; cf. Dalley 1989:256)

TABLE 3.1 THE RISING STARS OF ASTROLABE B

Month		Path of Ea	Path of Anu	Path of Ellil
I	Nisannu	Field	Venus	Plough
II	Ayyaru	Star s	Scorpion	Annunitu
III	Simanu	Jaw of the Bull	Scales	Snake
IV	Du'uzu	True Shepherd of Anu	Panther	Wagon
V	Abu	Arrow	Old Man	[...]
VI	Ululu	Bow	Swallow	She-goat
VII	Tashritu	The City of Eridu	[Lion]	Wolf
VIII	Arahsamnu	Great Lady	[Twins]	Eagle
IX	Kislimu	Mad Dog	Great Twins	Pig
X	Tebet	Mars	Crab	Jupiter
XI	Shabatu	Habashanu	Raven	Fox
XII	Addaru	Fish	Pole Star	Southern Yoke

Sources: Astrolabe B, VAT 9416 (KAV 218), section B. The most recent discussion of "astrolabes" is Hunger and Pingree (1999:50–63); see also Horowitz (1998:154–66). For identifications of constellations and star names, see Hunger and Pingree (1989:271–77).

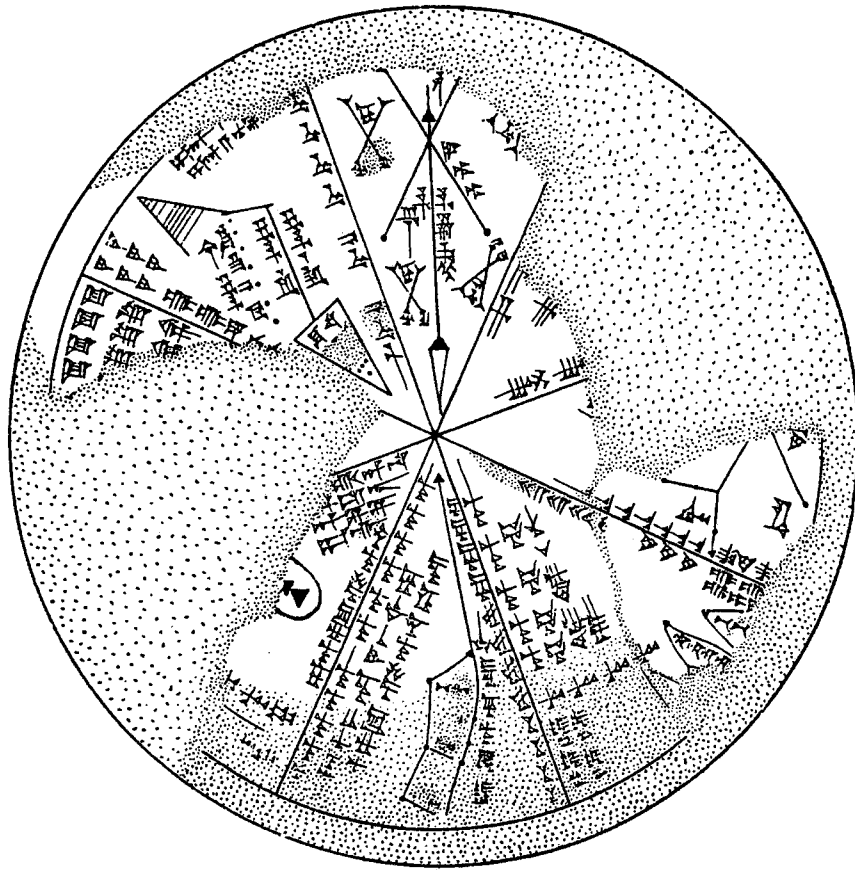


Figure 3.2 A circular star map from Nineveh dividing the night sky into eight and illustrating the most prominent constellations. From L.W. King, *Cuneiform Texts from Babylonian Tablets, &c., in the British Museum 33*. London: Trustees of the British Museum, 1912, pl. 10.

Only after he has set time in motion does Marduk create the natural world itself and then mankind (Tablets V and VI; cf. Dalley 1989:255–67).

The *Epic of Creation* embodies two conflicting ways of marking present time: Marduk orders to the moon and the “three stars each” to operate an ideal calendar of twelve 30-day months, making a year of 360 days. But the real lunar calendar—in which each day began at sunset, the start of each month was designated by the first sighting of the new moon 29 or 30 nights since the last one, and the year started with the new moon after the spring equinox—averages just 354 days. And of course the solar year, at 365 1/4 days, is longer than either. It was a major scholarly endeavor to keep the lunar calendar in line with the solar year and to reconcile them both to the ideal year that the gods had decreed. Shortfalls in the real calendar were seen as a divine indicator of the real world’s shortcomings in attaining godly standards of perfection. But the ideal calendar was not only understood to have been divinely ordained by the god Marduk: it was also administratively convenient. Temple records from the city of Uruk in the late 4th millennium BCE are already witness to a 360-day year of 12 30-day months, and this remained the accounting norm throughout the 3rd millennium and beyond (Englund 1988; 1991).

However, in reality about a half of the months of the year were only 29 days long: in Babylonian parlance the first day of the month was *turru* (turned back) instead of *kunnu* (firm) as it should have been. Assyrian and Babylonian scholars expended much energy and ingenuity in predicting month lengths, as witnessed by reports to kings as well as collections of prediction rules (Brack-Bernsen 2002). Thirty-day months were considered much more auspicious than their 29-day counterparts, as can be seen in the omens which scholars to the Assyrian court typically associated with sightings of the new moon (Beaulieu 1993). Compare the chief scribe Issarshumu-eresh’s upbeat assessment for a new month after 30 days: “If the moon becomes visible on the 1st day: reliable speech; the land

will become happy," with his more cautionary "If the moon becomes visible on the 30th day: there will be frost, variant: rumour of the enemy" (Hunger 1992:10–11).

Babylonian temples too needed to adjust their cultic cycle, moving clothing ceremonies and animal sacrifices forward or backward a day according to the length of the month (Beaulieu 1993; Robbins 1996). Here, for instance, is a priest of the sun-god Shamash in the 6th century city of Larsa writing to his superior ("father") at Eana in nearby Uruk: "Tablet of Shamash-idri to the administrator my father. May Shamash and Bunene decree the well-being and health of my father. We heard the report concerning the turning-back of the (first) day. Shamash will be clothed on the 15th day (instead of the 14th). May the lord send whatever (is needed) for (that) day. May the lord (also) send a weaver and a clothes-washer" (NCBT 58; Beaulieu 1993:77–78).

It was imperative that the temples retain the ideal calendrical cycle of the gods in the face of the vagaries of real-world lunation and that meant maintaining the rhythms of ritual whatever the profane reality.

Eleven days difference between the lunar and solar year also required regular readjustment to keep the months in line with the seasons and the new year in line with the spring equinox. Intercalation, or addition of an extra month after the sixth or twelfth month, was for most of Assyrian and Babylonian history carried out on an *ad hoc* basis, by royal proclamation following scholarly advice. Here the *tupshar enuma anu ellil* Balasi advises king Esarhaddon in early 670 BCE on the need to intercalate: "Concerning the adding of the intercalary month about which the king my lord wrote to me, this is indeed an intercalary year. After Jupiter has become visible I shall write again to the king my lord. I am waiting for it, but it will take the whole month. Then we shall see how it is and when we have to add the intercalary month" (Parpola 1993:42).

The astronomical compendium *MUL.APIN* contains two simple schemes for intercalation, based on observing celestial phe-

nomena which should theoretically occur on or near fixed dates in the ideal calendar, and adding an extra month when those phenomena occur a month too late, as Balasi describes (Hunger and Pingree 1999:75–79). This unnamed Assyrian king, probably also Esarhaddon, sends out notices to his provincial governors, presumably at his scholars' behest: "Order of the king to Zeruti (the city governor) and to the clergy of the city of Der. I am well; you may be content. Be informed that there will be an intercalary Addaru (Month XII). Perform the festival and rites of my gods in a favorable month" (Cole and Machinist 1998:4).

In the late 6th century intercalation became regulated not by royal proclamation but by the close observation of lunar periodicity. Starting in 527 BCE, during the reign of the Persian king Cambyses, there were three successive eight-year intercalation cycles to bring the spring equinox back into Addaru (Month XII) instead of Nisannu (Month I), before the adoption in 503 BCE of a fixed pattern of seven intercalary months every nineteen years, which is often erroneously named after Meton of Athens, fl. c.450 BCE (Britton 1993:66–68; Bowen and Goldstein 1988). The emerging understanding of the precise relationship between days, months, and years in 1st millennium Babylonia is surveyed by Britton (2002).

Babylonian chronology was based on regnal years. For instance when the trainee *ashipu* Anu-aba-usur copied a commentary on lunar eclipses from *enuma anu ellil* Tablet 20 for his father Iqisha he dated it "Uruk, Ululu (Month X) day 3, year 2 of Philip, king of the lands" (322 BCE) (W 22330; von Weiher 1983–98:IV,162). If, as was often the case, a new ruler came to the throne midyear, that accession year continued to be named after the previous king, and for dating purposes the new reign was deemed to start on the following New Year's Day.

It was not until the late 4th century BCE that a continuous dating system was invented, which would allow future years to be named and counted. The Seleucid Era officially began retrospectively on New Year's Day of the first regnal year of Seleucus I Nicator (3

April 311 BCE); year names now took the form "Year 97, Antiochus was king (214–3 BCE)" (Hunger and Pingree 1999:xiii). The 19-year intercalation cycle continued to be used. The units and arithmetical models with which the scholars measured the passing of time are well understood (Brown 2000b; Hunger 2001) even if the physical means by which they did so are not (Brown et al. 1999–2000; Fermor and Steele 2000).

Constructing the Past, Present, and Future

The distinction between the sacred, timeless past and quantifiable, historical time was not limited to the particular context of the *akitu* festival. It was also occasionally marked, for instance, in royal foundation inscriptions which kings had ceremonially buried in the walls of temples whose renovations they had sponsored. When in 679 BCE Esarhaddon, king of Assyria, commissioned the rebuilding of E-shar-ra, the god Ashur's temple in the city of Ashur, he also acknowledged the reconstruction work of earlier kings:

Ashur's ancient temple, which Ushpia my (fore)father, Ashur's high-priest, had previously built, and which had become dilapidated, and which Erishum, son of Ilu-shum-ma, my (fore)father, Ashur's high priest rebuilt: 126 years passed and it returned to dilapidation, and Shamshi-Adad, son of Ilu-kabkabbi, my (fore)father, Ashur's high priest, rebuilt it. 434 years passed and that temple was destroyed by fire. Shalmaneser, son of Adad-Nirari, my (fore)father, Ashur's high priest, rebuilt it. 580 years passed and the interior shrine, dwelling of Ashur my lord, the summit building, the shrine of the *kubu* images, the astral deities' shrine, the god Ea's shrine, had become worn out, dilapidated, and old. (Ass A, III:16–41; Borger 1956:1–6)

It happens that Esarhaddon's 13th century predecessor Shalmaneser I also left five different versions of a foundation inscription within the temple precinct and elsewhere in the city (Grayson 1987:109–237, A.O.77.1–5). Esarhaddon's history (one surviving exemplar of which even imitates it in deliberately archaizing script) is an almost word-for-word copy of one of them:

When E-hursang-kurkura, the ancient temple, which Ushpia, my (fore)father, Ashur's high priest, had previously built and which had become dilapidated, and which Erishum, my (fore)father, Ashur's high priest, rebuilt: 159 years passed and that temple returned to dilapidation, and Shamshi-Adad, also my (fore)father, Ashur's high priest rebuilt it. 580 years passed and the temple and its sanctuary were destroyed by fire. . . . I deposited my monumental inscriptions and foundation documents. He who alters my inscriptions and my name: may Ashur, my lord, overturn his kingship and eradicate his name and his seed from the land. (Grayson 1987:189 A.O.77.2 5–13, 21–24)

Esarhaddon's only non-trivial emendations to Shalmaneser's text are the addition of his predecessors' patronyms and the alteration of the time spans between them (Table 3.2).

Assyrian court scribes were able to assign exact spans of time to the past thanks to their system of naming each year after a *limmu*, or eponym official, who was chosen annually according to his status in the court hierarchy (Finkel and Reade 1995). The date at the bottom of one copy of Esarhaddon's foundation inscription, for instance, reads "Du'uzu (Month IV), day 19. Eponymy of Itti-Adad-aninu" (679 BCE). Lists of these *limmus* were maintained for administrative purposes, and in addition *limmu* officials often commemorated their year of office by setting up stele by the side of the monumental roadway into the city of Ashur.

TABLE 3.2 TIME SPANS BETWEEN REBUILDING OF ASHUR'S TEMPLE ACCORDING TO FOUNDATION INSCRIPTIONS OF SHALMANESER I AND ESARHADDON

Time span	Shalmaneser's Inscription	Esarhaddon's Inscription	Assyrian King List	Modern Maximum	Modern Minimum
Ushpia (regnal dates unknown) – Erishum (1939–1900)	uncounted	uncounted	uncounted	—	—
Erishum (1939–1900) – Shamshi-Adad (1813–1781)	159	126	[5 reigns]	158	87
Shalmaneser (1273–1244) – Shamshi-Adad (1813–1781)	580	434	421 [+ 2 reigns]	569	508
Shamshi-Adad (1813–1781) – Esarhaddon (680–669; 679)	—	580	523 (+ 42)	594	565

Limmu lists are completely reconstructible as far back as 910 BCE and fragmentarily attested for two hundred years before that (Millard 1994), while the so-called *Assyrian King List* records the names and lengths of reign of kings of Ashur going right back to the early 2nd millennium BCE and the days of “17 kings who lived in tents” (Grayson 1980). The King List, whose three best-preserved exemplars end with the reigns of Tiglath-pileser II (966–935 BCE), Ashur-nirari V (754–745 BCE), and Shalmaneser V (726–722 BCE), respectively, was compiled wherever possible from *limmu* lists; it describes one group of early rulers as “total of 6 kings [whose names occur on (?)] bricks, whose eponyms are destroyed.” According to modern chronology Shalmaneser’s time spans (159 years, 580 years) are much closer to modern consensus than Esarhaddon’s revisions of them (126 years, 434 years). The second of those, however, appears to be based on the *Assyrian King List*, composed on present evidence some three centuries after Shalmaneser’s reign. It gives the total time span between Shamshi-Adad I and Shalmaneser I as 421 years and 1 month plus the reigns of two kings whose lengths are missing from the extant exemplars. Esarhaddon’s scholars, then, seem to have put more weight on their own evidence-based quantifications of the past than on the authority of ancient writings and were capable of rewriting the historical record accordingly.

No temporal quantifications are attached to the temple’s supposed founder, Ushpia, who has left no traces whatsoever in the archaeological or historical record except as the penultimate entry in the enumeration of the “17 kings who lived in tents” at the start of the *Assyrian King List* (Harper et al. 1995:37). The building inscriptions of neither Erishum (Grayson 1987:19–37, A.O.33.1–14) nor Shamshi-Adad I (Grayson 1987:47–63, A.O.39.1,9,11) mention any royal builder earlier than Erishum himself. Shalmaneser’s scholars appear to have added Ushpia to the beginning architectural genealogy, as an attested king from the primordial time before the quantifiable past, in order to imbue the temple with deep antiquity (Robson 2001).



Figure 3.3 The seven antediluvian sages were thought to have been half man, half fish. This bas-relief was erected in the temple of Ninurta in Kalhu, c. 875 BCE, and is now in the British Museum. Photograph by the author.

Scholarship itself was deemed to have been bequeathed to mankind in the primordial past. Mesopotamian spells and incantations “creat[es] magic by harking back to a primeval time” (Livingstone 1999:131). And according to the late 2nd millennium *Myth of Adapa* and other sources, Ea, the god of wisdom, sent seven semi-divine sages to the antediluvian city of Eridu in order “to disclose the design of the land” (line 2; Dalley 1989:184). Esarhaddon’s son Ashurbanipal (668–27 BCE) recalls this tradition in one of his own self-laudatory royal inscriptions:

I have learnt the skill of Adapa the sage, secret knowledge of
the entire scribal craft;
I observe and discuss celestial and terrestrial omens in the
meetings of scholars;
With expert diviners I interpret the liver, the mirror of heaven;
I solve difficult reciprocals and multiplications lacking clear solution;
I have read elaborate texts in obscure Sumerian and
Akkadian which is difficult to interpret;
I examine stone inscriptions from the time before the Flood.
(LA I 13–18; Streck 1916:254–6)

Thus distant antiquity was inherent in the concept of scholarship itself.

As Esarhaddon implies in his account of the reconstruction of Ashur’s temple, there were considered to be ideal times for certain activities, and conversely ill-favored moments: “I felt danger, I was afraid. I was negligent in renewing that temple. In the diviners’ wooden bowl the gods Shamash and Adad answered me a true yes: they caused an omen to be written on a sheep’s liver for building that temple, for the renewal of its inner sanctum” (Ass A III.42–IV.6; Borger 1956:3).

Esarhaddon requests his diviners to ritually induce an ominous sign from the gods in the innards of a sacrificial sheep, confirming divine consent to his plans. But he could also have asked them to



Figure 3.4 A baru inspects the entrails of a the sacrificial ram, depicted on a bas-relief from Ashurnasirpal II's palace at Kalhu, c. 875 BCE, now in the British Museum. Photograph by the author.

TABLE 3.3 FAVORABLE, UNFAVORABLE, AND DANGEROUS OR EVIL DAYS OF THE MONTH OF DU'UZU

Day	Ashur hemerology	Nineveh-Babylon hemerology
7	Outbreak of fire	Favorable day in the house: favorable for the slave
18	Favorable for the [slave] in his master's house	Terror: hostility on the road
19	Favorable for the king	Favorable for the king
20	Unfavorable	Unfavorable
21	[. . .]	Favorable for the king

consult a hemerology, or ominous calendar. Many different hemerologies are known, from the mid-2nd millennium BCE to the Seleucid Period, enumerating the favorable (*magru*), unfavorable (*la magru*), and dangerous or evil (*lemnu*) days of the ideal year for carrying out particular activities, in patterns which vary slightly from city to city according to local belief systems and traditions of transmission (Labat 1939:40). Compare these two calendrically organized hemerologies for the days around 19 Du'uzu (Month IV), on which the building inscription was written (see Table 3.3). The first is from Ashur (Labat 1939) and the second known in copies from Nineveh and Babylon (Labat 1941:24), but according to both of them 19 Du'uzu was a day deemed to be "favorable for the king"

There seems to have been general agreement between the 1st millennium hemerologies, with the second half of the year being most favorable, with an average of 16 favorable days a month com-

pared to 11 in the first half. Neither are the gods' good graces spread evenly across the months: the 3rd day of the month was favorable only twice a year, while the 1st, 15th, and 22nd of the month were each favorable in 9 months out of 12 (Labat 1941:20–21). These 3 days are closely linked to the ideal lunar cycle as decreed by Marduk in the *Epic of Creation*. The Assyrian royal hemerology is even called *enbu bel arhi* ("New Moon, Lord of the Month").

Independent of a day's favorable or unfavorable aspect was its dangerous or evil character, which was unchanging from month to month. Early hemerologies counted 9 unfavorable days a month, but by the period we are dealing with there were just 5: the 7th, 14th, 19th, 21st, and 28th. On these days almost all activity was forbidden by the gods, except those relating to mourning and penitence (Labat 1939:44). It is striking that 4 of the 5 days are multiples of 7, and can once again be related to the key moments of the lunar cycle: the day before the full moon, the day before disappearance, and the 2 half-way points in between. It has also been suggested that the 19th day acquired its dangerous character from that fact that it is $7 \times 7 = 49$ days since the last new moon (Labat 1939:45). In the Nineveh-Babylon hemerology mentioned above, there were no favorable yet dangerous days in the months of Simanu (Month III) and Abu (Month V), yet in Tashritu (Month VII) and Shabatu (Month XI) all the dangerous days were considered favorable. On average two or three days a month were both favorable and dangerous at the same time.

Although no edition of *enbu bel arhi* has yet been published (see Landsberger 1915; Livingstone 1999:137), there is a contemporary royal menology, or list of ominous months for kingly activity, which bore the title *iqqur ipush* ("He Destroyed, He Built"). It exists in two different versions, one ordered primarily by activity, the other taking that same material and reordering it by month (Labat 1965). Interestingly in the light of Esarhaddon's concern over Ashur's temple, the first 33 sections of the first version all concern the foundation and restoration of temples and cultic objects:

If in Nisannu (Month I) he builds a temple: its foundations
will not be stable
If in Ayyaru (Month II), ditto: he will see evil
If in Simanu (Month III), ditto: joy
If in Du'uzu (Month IV), ditto: his temple will last
If in Abu (Month V), ditto: his heart will be content.
(Labat 1965:63)

The section on Du'uzu (Month IV) in the version ordered by month has not survived, but it will have conveyed the same message: that Du'uzu is a favorable month for building.

It may simply be coincidence that Esarhaddon's building inscription was dated to a day deemed favorable for royal construction activities, but there is further evidence that menologies and hemerologies did not sit idle on the library shelves. Neo-Assyrian *barutu* (liver omen) rituals and reports were never performed and written on the days forbidden by *enbu bel arhi*, with just one exception. Outside the immediate cultic context of the royal court, the dates of contemporaneous legal documents from Nineveh, Kalhu, and Ashur do not follow the hemerologies so strictly. Nevertheless there seems to have been a clear preference for the 1st and 20th days of the month as propitious times to enter into contracts, and an avoidance of the 2nd, 8th, 19th, 24th, and 28th–30th days (Livingstone 1993).

Nearly twenty letters to Assyrian kings from their scholars attest to the regular use of menologies and hemerologies. Here the *tupshar enuma anu ellil* Nabu-ahhe-eriba writes to king Esarhaddon in Addaru (Month XII) of 670 BCE: "Concerning the arrangement of the banquet about which the king, my lord, wrote to me—(according to the menologies) 'If he wants to take the cult ceremonies'—it is favorable this month. It is favorable to arrange the banquet. Let them arrange it on the 13th, 15th, or the 17th day" (Parpola 1993:70).

In this letter the *ashipu* Nabu-nadin-shumi countermands the king's orders with the authority of the hemerologies behind him:

Concerning the apotropaic *namburba* ritual against evil of any kind, about which the king, my lord wrote to me, "Perform it tomorrow"—the day is not favorable. We shall prepare it on the 25th and perform it on the 26th.

Anyway, the king, my lord, should not worry about this portent. The gods Bel (Marduk) and Nabu can make a portent pass by, and they will make it pass by the king, my lord. The king, my lord should not be afraid. (Parpola 1993:141)

The Assyrian king's life was thus shaped and controlled by the patterns of the ominous calendar. His actions were monitored, sanctioned, and temporally constrained by his scholars, who imposed their own individual readings of ominous portent on the person of the king and thereby on the state as a whole. But if there were thus limits to royal power, there were even greater restrictions on the scholars' influence over the king. There was intense competition between them for royal attention—Balasi and Nabu-ahhe-eriba were in particularly acrimonious dispute (Brown 2000a:240)—and the king could dispense with their services at will (Parpola 1987). As the second paragraph of Nabu-nadin-shumi's letter shows, scholars did much to support the king and to diffuse the load of decision making. The mechanism of requesting divine sanction for royal action by means of observing or inducing omens enabled the king to shift the burden of responsibility onto the shoulders of the gods, but it was, as we shall see, a negotiable process. The scholars had the means to persuade the gods to reverse their decisions if they were felt to be unfavorable to the king or land.

Esarhaddon's inscription commemorating the reconstruction of Ashur's temple depicts the king and his commission within a temporal continuum. Not only does the scholarly author

take care to represent the architectural history of the building accurately, complete with revised positioning of previous acts of rebuilding within the quantified past; he also chooses an apposite propitious day in the present to mark the new enterprise. Further, he is able to imagine the process of building (already attested three times in the past and once in the present) iterated in the future. He has the king address posterity with these words: "I made monuments and inscriptions and I wrote on them the deeds I had done. For later kings my sons, I left them behind forever. May the kings my descendants, whose name Ashur calls for the lordship of the land and the people, see my monument and anoint it with oil, offer a libation, and return it to its place" (Ass A, VII.35–VIII.13; Borger 1956:6).

Just as Esarhaddon has respected the writings and deeds of his predecessors, future generations should venerate his. There is no sense here that time might come to an end; rather, Ashur and Assyria will endure in perpetuity and so will Esarhaddon's monuments, ensuring that his good name lives on for future generations. There is no hope for bodily immortality, but one's reputation may live forever in the collective memory. This is one of the many morals of the *Epic of Gilgamesh*: although Gilgamesh fails in his quest to attain eternal life, he is immortalized both through his monumental building works in the city of Uruk and through the enduring appeal of the *Epic* itself (George 1999).

Time's Arrow: Negotiating the Future

For kings to be able to represent their good and magnificent deeds to posterity they must earn the continuing support of the gods, by ensuring their actions did not run counter to the gods' desires. The gods could reveal their intentions for the world and the state in one of two ways. Specialist diviners could perform rituals to induce revealed omens in the entrails of sacrificed sheep and goats, as allud-

ed to by Esarhaddon above. A manual of extispicy described the rituals to be performed (Starr 1983). The scholars formulated the king's question and laid it before the sheep or (later) wrote a report to the king after the outcome had been determined (Starr 1990).

Possible deviations from the normal configurations of the animals' innards and their ominous significance were systematically recorded and commented upon in a long treatise called *barutu* ("Extispicy") (Koch-Westenholz 2000). Here, immediately after Esarhaddon's death, the crown prince Ashurbanipal asks the sun-god Shamash whether his twin brother should be crowned king of Babylon in the spring *akitu* festival:

I ask you Shamash great lord whether Shamash-shumu-ukin, son of Esarhaddon king of Assyria, should within this year seize the hand of the great lord Marduk in the Inner City (of Ashur) and lead Bel (= Marduk, to Babylon), whether it is pleasing to the great lord Marduk, whether it is acceptable to the great lord Marduk.

Be present in this ram, place in it a firm and positive answer, favorable designs, favorable and propitious omens by the oracular command of your great divinity, and may I see them. May this query go to your great divinity, O Shamash great lord, and may an oracle be given as an answer.

Nisannu (Month I), day 23, eponymate of Mari-larim (668 BCE). (Starr 1990:262)

It was also possible to read the gods' intentions by observing and deciphering the very configuration of the land and sky and even the bodies and behaviors of individuals: that is, in the world as Marduk created it. The omens relating to observable portentous phenomena on earth were collected together into four standard series, just as *enuma anu ellil* and *barutu* comprised the omens of the sky and the entrails of sacrificed animals. The terrestrial omen series was

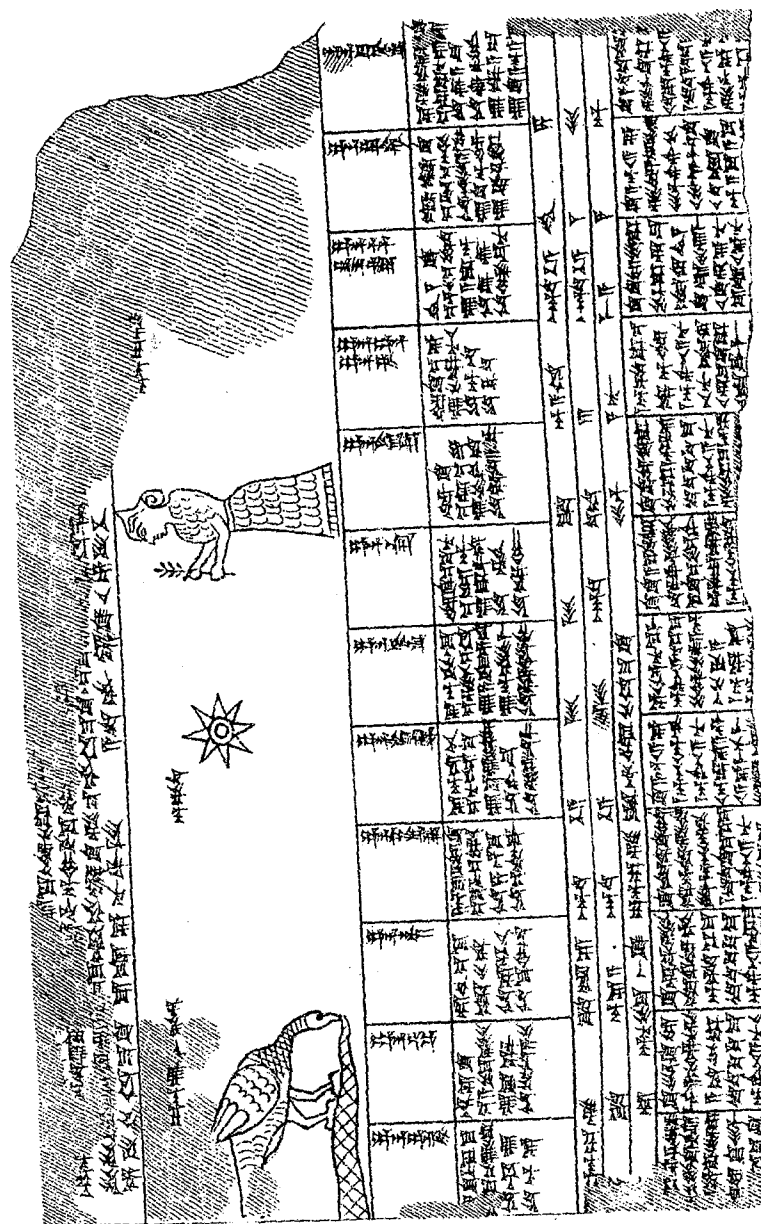


Figure 3.5 Drawings of constellations from a calendrical tablet from Uruk, c. 200 BCE, concerned with lunar eclipses near zodiacal constellations, showing the tail of the Serpent (Hydra), the Raven (Corvus), Attack (Mercury), and the Furrow (Virgo). From F. Thureau-Dangin, *Tablettes d'Uruk à l'usage des prêtres du temple d'Anu au temps des Séleucides*. Paris: Geuthner, 1922, no. 12.

called *shumma alu* ("If a City") (Freedman 1998), the teratological (birth) omen series *shumma izbu* ("If an Anomalous Birth") (Leichty 1969), the physiognomic omen series *alamdimmu* ("Physique") (Böck 2000) and the diagnostic omens *shumma ashipu* ("If an Incantation Priest") (Heessel 2000). As a 7th century catalogue of celestial and terrestrial omen series, the *Babylonian Diviner's Manual*, explains: "the signs on earth just as those in heaven give us signals. Sky and earth both produce portents: though appearing separately they are not separate: sky and earth are related (ll. 38–40; Oppenheimer 1974).

The catalog ends with complicated instructions on how to confirm or refute the validity of an omen by checking its date and time of day in a simple menology (Williams 2002).

Deviations in celestial motion from the ideal calendrical periodicities were considered particularly ominous as they indicated real-world slippage from ideal time. To this end, scholars kept observation records of lunar eclipses from the mid-8th century BCE, and later many other lunar, solar, and planetary phenomena, in so-called astronomical diaries, the latest of which is dated to 10 BCE (Sachs and Hunger 1988; Steele 2001). They soon discovered that lunar eclipses were possible (though not always visible) every six months, or sometimes every five, and that solar eclipses can occur 14–15 days before or after a lunar eclipse possibility. Such events were considered dangerous even when they were on schedule, but the omen series show that occurrences at unexpected times were an indication that the world was abnormally out of kilter with expectations. The ominous import of the timing of eclipses was covered in Tablet 19 of the celestial omen series *enuma anu ellil*; for instance: "If a lunar eclipse occurs on day 21 (of Tashritu = Month VII), and it sets during its eclipse: they will take the crowned king from his palace as a captive" (section III 13; Rochberg-Halton 1988:171).

Scholars would keep watch and report back to the king on the exact details of each celestial event and its ominous import, as exemplified here by the *tupshar enuma anu ellil* Nabu-ahhe-eriba's letter to Esarhaddon in Nisannu (Month I) 667 BCE: "Good health to

the king, my lord. It is a dark day today, so I did not include a blessing. The eclipse moved from the east and settle over the entire west. Jupiter and Venus were present during the eclipse until it cleared. For the king my lord all is well; it is evil for Amurru. Tomorrow I shall send the king my lord a written report on this lunar eclipse" (Parpola 1993:75).

Because the eclipse pointed westward its influence would be felt in Amurru, to the west of Assyria, and once more the king and country were safe. If, however, the eclipse should unequivocally portend ill for Assyria itself, fate had to be averted. A substitute king was crowned and while the real king was ritually purified with lengthy and complicated ritual called *bit rimki* ("Bath House") (Laessle 1955; Borger 1967). Here the Babylonian scholar Mar-Issar reports in Ululu (Month X) 671 BCE on the successfully averted evil of a lunar eclipse to Esarhaddon, who underwent *bit rimki* at least four times in his eleven-year reign: "The substitute king, who on the 14th sat on the throne in Nineveh and spent the night of the 15th in the royal palace, and on whom the eclipse took place, entered the city of Akkad safely on the night of the 20th and sat upon the throne. I made him recite the scribal recitations before the sun-god Shamash, he took all the celestial and terrestrial omens on himself, and ruled all the countries. The king, my lord, should know this" (Parpola 1993:351).

Sometimes, however, eclipses were not observed as predicted, but that did not necessarily mean that there was no danger. Either a positive sign of temporal normality was needed, or the full period of danger had to be endured, as Adad-shumu-usur here explains to Esarhaddon in 669 BCE: "As regards the substitute king about whom the king, my lord, wrote to me: 'how many days should he sit on the throne?', we waited for a solar eclipse, (but) the eclipse did not take place. Now, if the gods (i.e., sun and moon) are seen in opposition on the 15th day, he could go to his fate on the 16th. Or if it suits the king, my lord, better, he could (as well) sit the full 100 days" (Parpola 1993:220).

Omens, then, had expiration dates. But evil omens, it appears, did not necessarily have to be dodged by deflection onto another target. The gods could be persuaded to change their minds and to rewrite the great lapis lazuli Tablet of Destinies, on which they recorded their plans for the future of the supernatural and natural worlds. Its power is outlined in the *Epic of Creation* by evil chaos Tiamat as she gives it to her lover Qingu:

Then she gave him the Tablet of Destinies and made him
clasp it to his breast.

"Your utterance shall never be altered! Your word shall be
law!" (Tablet I, 157-58; Dalley 1989:238)

The idea is further elaborated in the *Epic of Anzu*, in which the eponymous anti-hero, a monstrous lion-eagle, steals the Tablet of Destinies from his godly master Ellil as he is relaxing in the bath:

"I shall take the gods' Tablet of Destinies for myself
And gather to myself all the responsibilities of the gods
I shall possess the throne and be master of the rites!
I shall direct every one of the Igigi-gods!"
He plotted opposition in his heart
And at the chamber's entrance from which he often gazed,
he waited for the start of day.
While Ellil was bathing in the pure waters,
Stripped and with his crown laid down on the throne,
He gained the Tablet of Destinies for himself,
Took away the Ellil-power. (Tablet I; Dalley 1989:207)

The gods are powerless without the Tablet, and Anzu is in complete control of the destiny of the world. Several gods refuse the challenge of combating Anzu, until the warrior-god Ninurta rises to the occasion. The two foes engage in a mighty cosmic battle. Anzu, with the Tablet of Destinies in his possession, is able to



Figure 3.6 The Anzu bird fought the heroic god Ninurta for possession of the Tablet of Destinies. This stone carving of the cosmic battle was erected in the temple of Ninurta at Kalhu, c. 875 BCE, and is now in the British Museum. Photograph by the author.

reverse the flow of time, temporally deflecting all attempts to kill him by returning the constituent parts of Ninurta's arrow to their original states:

[Ninurta] set the shaft to the bow, drew it taut,
 Aimed the shaft at him from the bow's curve.
 But it did not go near Anzu: the shaft turned back.
 Anzu shouted at it, "You, shaft that came:
 Return to your reed thicket! Bow-frame: back to your copse!
 Bow-string: return to the ram's gut! Feathers: return to
 the birds!"
 He was holding the gods' Tablet of Destinies in his hand,
 And they influenced the string of the bow: the arrows did
 not come near his body.
 Deadly silence came over the battle, and conflict ceased.
 Weapons stopped and did not capture Anzu amid the mountains.
 (Tablet II, 59-69; Dalley 1989:214)

Eventually Ninurta is forced to find more cunning means to outwit his opponent and return the Tablet of Destinies to its rightful owner.

If the scholars could not persuade the gods to turn back the clock—in any case this was an abuse of the Tablet of Destinies—they could at least convince them to rewrite the future before it had happened. There were two methods for doing this. On the one hand there were *namburibu* incantations and rituals for removing evil, especially those portended by omens from the terrestrial series *shumma alu* and *shumma izbu*, which took the form of a trial, in front of three gods, of the supposed harbinger of evil (Maul 1994, 1999). Nabu-nadin-shumi delays such a ritual in his letter to Esarhaddon quoted above. There were also the *kalutu* rituals and laments, performed by the *kalu* lamentation priests during dangerous periods, in order to persuade the gods to let portended evil pass by. A legal record from Uruk in c.530 BCE, during the reign of the Persian king Cyrus,

describes the public performance of a *kalutu* ritual in the nearby city of Larsa: "On Simanu (Month III), day 13, year 8 of Cyrus, king of Babylon, king of the lands, after sunset, the *kalus* of the E-babbar temple played the copper kettle-drum at the gate of the E-babbar and declared, 'Eclipse!', and all the inhabitants of Larsa saw with us the playing of the copper kettle-drum" (Beaulieu and Britton 1994:74, 17–22).

But it becomes clear from a related legal deposition, made by the chief *kalu* Shamash-tabni-usur of the Sin-leqi-unninni family, that the *kalus* had undertaken this performance without consulting their superiors at Uruk, and that the predicted eclipse did not in fact take place (Beaulieu and Britton 1994). The mismatch between prediction and actuality may have been one of the factors behind the reform of the intercalation cycle discussed above, instituted just a few years later in 527 BCE.

The 5th and 4th centuries saw a rapid growth in the scholars' power to predict ominous celestial events (Britton 1993). The corpus of astronomical diaries now amounted to several centuries of data, enabling even the longest planetary periodicities to be identified and described. The 5th-century invention of the zodiac as a celestial reference grid encouraged more accurate observations and predictions, but also had non-astronomical consequences. For instance, an elaborate calendrical scheme developed in the 5th century BCE that associated particular incantations and medical ingredients with each day of the ideal year. The so-called *Kalendertexte* scheme depended on a complex temporal relationship in which each of the twelve zodiacal signs is further subdivided into twelve "micro-signs." That in turn is intimately related to an idealised arithmetical scheme for representing lunar motion throughout the ideal year now called the Dodekatemoria (Brack-Bernsen and Steele, 2003). Even scholarly medical theory, then, was imbued with the idea of temporality.

The development of fully mathematical theoretical astronomy culminated in the late 4th century BCE. In Babylon at Marduk's

temple Esangila the Mushezib family and others were closely associated with one style of predictive model, now called System A, while at the Resh temple in Uruk the Ekur-zakir and Sin-leqi-unninni families favored the scheme now known as System B (Neugebauer 1955). Both involved the tabulation of a mass of complex calculated data into ephemerides, or predictions of the lunar, solar, and planetary positions for the coming year(s), computed according clearly laid out procedures. But still the rituals to avert the evil of an eclipse were performed. Predictable events were no less ominous; indeed it appears that their very predictability led to the performance of more elaborate apotropaic rituals than before, as one could now be sure that the expense would not be wasted (Brown and Linssen 1997). Lunar eclipse rituals from 3rd century Uruk involved massive public spectacle with drums, wailing, and the singing of Sumerian *balang* and *ershema* laments (Cohen 1988; Black 1991):

On the day of the lunar eclipse they will bring the bronze *halhallatu* drum, the bronze *manzu* drum, and the bronze kettledrum from the storehouse. . . When the lunar eclipse begins, the *kalus* will put on linen garments. . . They raise lamentations, wailing, and mourning towards the moon in eclipse. . . .

When the appearance of the eclipse is as one third of a disc, "The bull in its fold" is performed. They join in with "Mermer, a storm, who consumes life." The *ershema* is "Woe, he it is who has destroyed my *abzu*!" When the appearance of the eclipse is as two thirds of a disc, "The bull in its fold" and "Ah, woe is your heart" are performed. The *ershema* is "Woe, he it is who has destroyed my *abzu*!" They join in with "Mermer, a storm, who consumes life." . . .

When the eclipse has cleared, they will leave the bronze kettledrum; they will leave the magic flour circle and the

kukkubbu-jar of [tamarisk] tears and cast the rest into the river.*

The scholarly tablets of the Sin-leqi-unninni family of *kalus* in 3rd-century Uruk include almost as many examples of apotropaic *kalutu* as they do mathematical predictive astronomy (Robson, forthcoming: chapter 9). Even Alexander the Great underwent the substitute king ritual in Babylon some time in the 320s BCE, as recounted in a rather garbled fashion by Plutarch in his *Life of Alexander*:

On another occasion Alexander took off his clothes for exercise and played a game of ball. When it was time to dress again, the young men who had joined him in the game suddenly noticed that there was a man sitting silently on the throne and wearing Alexander's diadem and royal robes. When he was questioned, he could say nothing for a long while, but later he came to his senses and explained that he was a citizen of Messenia named Dionysus. He had been accused of some crime, brought to Babylonia from the coast, and kept for a long time in chains. Then the god Serapis had appeared to him, cast off his chains, and brought him to this place, where he had commanded him to put on the king's robe and diadem, take his seat on the throne, and hold his peace. When he had heard the man's story, Alexander had him put to death, as the diviners recommended. (73–74; trans. Scott-Kilvert 1973:330–331)

* BM 134701, lines 1'–4', 7'–10', 15'–16' (Brown and Linssen 1997:160–62). None of the three eclipse ritual tablets from Seleucid Uruk is dated, but Seleucid tablets of different *kalu* rituals from Uruk date from 289 and 230 BCE (AO 6472 and Ist O 174, Thureau-Dangin 1921:34–45) and 200, 176, and 165 BCE (van Dijk 1980:nos. 5, 6, 12). These latter tablets were excavated in the god Anu's temple, Resh.

Thus the coming of “scientific”—rather, quantitative—astronomy as a means of reliably predicting future celestial events did not annul their power as signs from the gods about their intentions for the terrestrial world.

The Temporal Order

How justifiable is it to examine this broad chronological and cross-generic sweep of evidence? I stated at the beginning that such an eclectic approach was typical of the scholars themselves. To demonstrate this, we shall look briefly at the contents of two scholarly libraries from the period under discussion. The temple library of Nabu, god of scholarship, in the Assyrian city of Kalhu was active over the 8th and 7th centuries BCE (Wiseman and Black 1996:4). Thirty of its three hundred tablets preserve colophons, some of which bear the names of an 8th-century family of royal *ashipus* while others bear the name of the scribe Nabu-zuqup-kena of the Gabbu-ilani-eresh family, who followed the royal court to Nineveh when it moved there in 705 BCE. Among its holdings were tablets from the standard terrestrial, celestial, teratological, diagnostic, and physiognomic omen series; the astronomical compendium MUL.APIN; hemerologies and menologies; apotropaic *namburba* incantations and rituals; the *Epic of Creation* and the *Epic of Gilgamesh*; and royal inscriptions of the 9th to 7th centuries BCE.*

* In detail: 2 tablets of the astronomical compendium MUL.APIN (“Plough star”); 23 tablets of the celestial omen series *enuma anu ellil* (“When the gods Anu and Ellil”); 14 tablets of the terrestrial omen series *shumma alu* (“If a City”); 7 tablets of the teratological omen series *shumma izbu* (“If an Anomalous Birth”); 4 tablets of the menology *iqqur ipush* (“He Destroyed, He Built”); 6 tablets of hemerologies; 4 tablets of the sacrificial divination series *barutu* (“Extispicy”) and 1 divinatory model of a sheep’s lung; 3 tablets of the diagnostic omen series *shumma ashipu* (“If an Incantation Priest”) and 1 catalogue of the series; 6 tablets of physiognomic omens; 10 tablets of apotropaic *namburba* incantations; 1 tablet of the *Epic of Gilgamesh* and 2 tablets of the *Epic of Creation*; over 50 tablets of incantations and associated rituals; and an unknown number of royal inscriptions from the reigns of Shamshi-Adad V to Ashurbanipal (823–627 BCE) (Wiseman and Black 1996).

At the other end of the geographical, chronological, and contextual span of this chapter is the private library of the *ashipu* Iqisha of the Ekur-zakir family in Uruk. He left in his house nearly 250 scholarly compositions, household legal records, and school exercises. Thirty identifiable scholarly tablets, dated to the period 322–317 BCE, bear his name. They include tablets from almost all the standard series of omens, and commentaries on them; zodiacal-medical *Kalendertexte*; other astrology; apotropaic incantations and rituals.* Other tablets in the library not directly attributable to Iqisha himself include many more examples of the same types of composition, as well as lunar and planetary ephemerides, hemerologies, and menologies, the *Epic of Gilgamesh*; *kalutu*, *namburba*, and *bit rimki* incantations and rituals.†

In other words, the professional interests of both Iqisha and the Nabu temple scholars covered almost exactly the range of text-types discussed here. All that is missing are the equinoctial *akitu* rituals which, however, are known from 8th century Ashur and Nineveh and 3rd century Uruk as well as 1st millennium Babylon (Cohen 1993:420–53). Taking into account the fact that some compositions, such as MUL.APIN (“Plough Star”) fell out of favor, while others, such as the *Kalendertexte* and the mathematical astronomical texts, were post-Assyrian inventions, the contents of the two libraries are

* In detail: 2 tablets of the calendrical scheme known as *Kalendertexte*, for Months IV and VIII; 3 tablets of quantitative astrology; 2 tablets with commentaries on the celestial omen series *enuma anu ellil* (“When the gods Anu and Ellil”); 4 tablets of the terrestrial omen series *shumma alu* (“If a City”); 2 tablets of commentaries on the teratological omen series *shumma izbu* (“If an Anomalous Birth”); 1 tablet of the diagnostic omen series *shumma ashipu* (“If an Incantation Priest”); 2 tablets of the sacrificial omen series *barutu* (“Extispicy”) and commentaries; 9 tablets with series of incantations and associated rituals (Hunger 1976; von Weiher 1983–98). Findspot information in Hunger (1972) and von Weiher (1979).

† In detail: 2 lunar and planetary ephemerides and 3 other astronomical works; 3 or 4 tablets of the *Epic of Gilgamesh*; 2 tablets of hemerologies; 3 tablets of the menology *iqqur ipush* (“He Destroyed, He Built”); 4 tablets of *namburba* rituals to avert evil omens; 3 tablets of the series *bit rimki* (“Bath House”) for the substitute king ritual; 1 tablet of the standard series associated with lamentation priests, *kalutu*; 1 tablet with a fragment of a royal inscription (Hunger 1976; von Weiher 1983–98). Findspot information in Hunger (1972) and von Weiher (1979).

remarkably similar. While some scribal circles, families, and individuals had particular interests and preferences, the scholars shared and developed a large body of knowledge and conceptions about time.

Issues of temporality permeated almost all aspects of scholarly endeavor, from medicine to divination, from literature to astronomy. The centrality of lunar cycle was affirmed and strengthened each new year with the performance of the *Epic of Creation*, in which creation, destruction, and renewal were prominent themes. The scholarly view of time as favorable or unfavorable, dangerous or safe dictated their patterns of professional activity and deeply influenced the timing of matters of state. Not only were royal events fixed according to the scholarly calendar but also great outlays of wealth and specialist personnel were expended on matters temporal. Enormous and elaborate public rituals, from *akitu* to *bit rimki*, *nam-burba*, and *kalutu*, were each designed, in their different ways, to control and manage present and future time.

The constant intellectual battle to reconcile the ideal 360-day cycle of lunations with the solar and lunar years was a major driving force behind the development of observational astronomy in Assyria and Babylonia. Successive generations of scholars cooperated to produce a massive body of data and theory to describe and predict the motions of the heavenly bodies and thus unwittingly laid down the foundations on which the modern scientific concept of time is based.*

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