The Meaning of Time –Mesopotamian Calendar Divination[1]

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Abstract
Time is elusive, impossible to fathom and yet somehow also measurable and takes on a significance simply by being subdivided into units based on observation of celestial phenomena. Calendar divination is probably the most pervasive and viable of all divination genres. Today year numbers are routinely used to predict disaster, whether cataclysmic or merely digital – like the millennium bug which fortunately never hatched. In Mesopotamian divination, the calendar date of an occurrence was frequently used as a parameter in astrology. The months and days themselves, the units of the calendar, were used as a predictive tool. Days and months were categorized as favourable and unfavourable, particular dates were deemed suited or not suited for particular purposes such as building a house, digging a well, making a sacrifice, eating leeks or taking a wife. The texts concerned with the nature of days and months are attested from the middle of the 2nd millennium BCE and continued to be copied into the late first millennium BCE in Seleucid Uruk. The traditions of the hemerologies were transmitted in Hellenistic astrology and the traditions survived in Europe in popular almanacs and the work of astronomers like the Danish Tycho Brahe. This paper will attempt to follow their trail.

In the following, I will try to demonstrate that the interpretation of the meaning of time[2] in Mesopotamia changed from a general perception of time as a thing with inherent characteristics to a form of calendar divination closely dependent on an ideal calendar and on celestial phenomena (with all their religious and other cultural specific connotations) to a form of universallyapplicable divination. This final form was primarily based on astrological principles and concepts, and may have blended easily into the Hellenistic cauldron, but it was still deeply rooted in the centuries' old almanac and mythology. This change in the meaning of time was not evolutional, rather the concept and its uses grew like a tree, new layers of meaning encapsulating, but not replacing, those which came before.

Calendar divination can be defined as any form of artificial divination that uses the **calendar as its medium**. Artificial divination[3] relies on the observation and manipulation of symbolic systems. The

[1]My participation in the conference was made possible by a grant from the Center for Canon and Identity Formation of the University of Copenhagen.

[2]When speaking of the "meaning of time" it must be kept in mind that there were no Sumerian or Akkadian words for "time" as an abstract concept. Just as Old Testament Hebrew, Akkadian had no equivalent to the Greek χρόνος, or the Latin *tempus*. The Akkadian term*adannu* meanta "fixed date/time" or a "fixed period", *simānu* meantthe "right date/time" or the "right period", but neither of these terms had the connotations of the Greek καιρός, opportune moment. There were plenty of Sumerian and Akkadian terms for specific units of time: Day (UD/*ūmu*), year (MU/*šattu*), month (ITI/*ar□u*), double-hour (*bīru*), the watches of day and night; and of course terms for the two main seasons (summer, winter) and for the times of day (morning, night). There are also terms to describe relative points on a time line: the past could be described as the "old" days, whereas the term "distant days" could either refer to days in the distant past or in the distant future. Also, there was no lack of calendric schemata and systems for keeping track of the passing years. The word for "day" had tosome extent to serve an all-round purpose.

[3] Typologies of divination abound. I follow in the footsteps of Plato and Cicero and define "oracle" as an answer to a question (e.g. heads-or-tails), and an "omen" as a perceived message, which is not an answer to a specific question (e.g. spilt salt). "Artificial" divination is based on the interpretation and manipulation of complex systems (e.g. astrology), whereas "natural" divination is immediately intelligible. Plato *Phaedrus* 244, see also M.A. Flower, *The Seer in Ancient*

diviner operates schemata and hermeneutic rules, sometimes so intricate that they, in theory at least, allow the bias of the diviner little scope for influencing the outcome. The validity of all kinds of divination rests entirely on the diviner being perceived as neutral; the message should not be his, but stem from sources over which the individual has no control.All forms of artificial divination, no matter what is used as medium, are based on human constructions. When natural phenomena are observed both the observation itself, the sign or signs, and the interpretation thereof are based on preconceived ideas and norms. For instance, the Babylonian astrologer would only look for phenomena already known to him as significant, or which fell within a preconceived pattern. If he had made an observation which fell outside the scope of astrology, he would dismiss it as irrelevant.[4] A cultural system, as a calendar is, should be the ideal vehicle for divination, since it comes fully fledged with inherent qualities derived from its defining elements, names, numbers, and regulations, all of which are culturally significant. Though calendars are often based on the observation of celestial phenomena, there is no naturally given calendar, or method of time reckoning, to which we must all subscribe, as anyone familiar with the basics of astronomy is well aware. Nevertheless, humans have a tendency to perceive of calendars exactly thus, as something absolute, rather than purely conceptual.The calendar thus often takes on a life of its own, it becomes more than a practical indexing and measuring tool of human life, it functions in its own right as a guide to action, a confirmation of decisions, or regulation of behaviour; in other words, it becomes the basis of divination.

Calendar divination can with some right be viewed as a form of celestial divination, since most calendars are based on the periodicity of celestial phenomena, and indeed many modern forms of calendar divination have close links with astrology.[5]Calendar divination isone of the oldest known forms of celestial divination and also one of the most pervasive and viable of all divination genres. It is found in ancient and modern societies, in a variety of forms from the simple isolated superstition[6] to complex and intricate systems mastered only by specialists.No more than a hundred years ago, almanacscharting favourable and unfavourable days of each year were common household items in Scandinavia,[7] and a quick survey of this vast genre in western European history

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Greece, (Berkeley, Los Angeles: University of California Press, 2008), pp. 84-91; Cicero *De Divinatione*, see also e.g. Giovanni Manetti, *Theories of the sign in classical antiquity*(Bloomington: Indiana University Press, 1993), p.19.

[4] Se for instance the letter from an Assyrian astrologer, Simo Parpola, *Letters from Assyrian and Babylonian Scholars* (SAA 10),(Helsinki: Helsinki University Press, 1993) no. 8.

[5] Complex astrological calendar divination is practiced today, for instance in Japan (Sensei Hidekazu, 'On Cognitive Aspects of Rhetorical Time Reckoning: Metaphor and Image-Schema in the Calendrical Divination in Okinawa', *Asian Folklore Studies* 62 2003, 291-321), and Mongolia, see B.G. Baumann, *Divine Knowledge: Buddhist Mathematics According to the Anonymous Manual of Mongolian Astrology and Divination*, (Leiden and Boston: Brill, 2008).

[6]Friday the 13this of course just one, modern, example of time becoming imbued with meaning simply by being defined by calendric metrics. Recent studies have shown that Friday the 13this the most popular modern superstition, and that it actually influences behaviour to such an extent that it can be measured in statistics.British researchers undertook a study over some years of the amount of traffic and traffic accidents on Fridays the 13th and Fridays the 6threspectively. The study showed a significant increase in automobile accidents on the M25 on the 13th as compared to the 6th, even though more people avoided making any unnecessary trips. See T.J. Scanlon, Robert N. Luben, F.L.Scanlon, and Nicola Singleton, 'Is Friday the 13th bad for your health? (Risk of accidents on Friday the 13th)', *British Medical Journal,* 1993, 307-1584.

[7]The Swedish "Olykcsdagar" which were part of the so-called "bondepraktik" well into the 20th century,were probably ultimately derived from the medieval "dies mali".Axel Nelson, 'Om den Svenska Bondepraktikans Ursprung', *Nordisk tidskrift för bok- och biblioteksväsen* 1934, http://runeberg.org/bokobibl/1934/0063.html(cited per January 2013). Medieval almanacs are themselves a vast topic. A large number of medieval calendar manuscripts have been edited, see e.g. László Sándor Chardonnens, *Anglo-Saxon Prognostics, 900-1100. Study and Texts*. (Leiden, Boston: Brill, 2007), for texts from Britain and for further references. The topic of early modern almanacs is equally vast, alone for the fact that almanacs were rivalled in popularity only by the Bible. It has however not received much scholarly attention, see

leaves one with an impression of a surprisingly homogenous phenomenon. Despite the many differences in details, the fundamental similarities with Mesopotamian calendar divination texts also remain striking. As always with cultural (and biological phenomena) that appear to us similar in form or function the question is, whether the similarities are caused by an internal genetic relationship, or whether the similarities are caused by external, generic factors. But it is often very difficult to determine whether we are dealing with convergent evolution or cultural transmission.[8]

It has become an Assyriological commonplace to assertthat it is too early days yet to attempt a history of religion or mentality of the civilizations of ancient Mesopotamia. One of the very sound reasons for this point of view is that the sources are still too few and far between, and many of those which are available still remain unpublished, and much spadework (both in the field and at the desk) remains to be done. Another valid point is that the Mesopotamian civilizations revered their written traditions, so concepts and beliefs echo over the millennia, but this apparent continuity of ideas and themes probably is deceptive, and obscures changes in mentality and ideology, which we are hard put to uncover today. These points are certainly true also of Mesopotamian calendar divination. Still, it is possible to trace Mesopotamian divination more or less closely over the course of more than two millennia, during whichit underwent changes in use and significance, and Mesopotamian calendar divination changed not only in content, but also in scope.

The Calendar[9]

In the third and early second millennium BCE the different Mesopotamian city states had their own cultic calendars, but they were all based on observations of the lunar cycle. Seasonal rites were accorded dates in the lunar-based calendars, which were regularly intercalated to prevent them from circling the year. A normal year held 12 lunar months, that is about 354 days, which is a little above 11 days shorter than the solar year. In order to keep the months synchronized with the seasons, an intercalary month therefore had to be added regularly. Most of the month names referred to local cultic events. A number of days every month were devoted to the cult of local deities, but in all the cultic calendars, dates associated with the lunar cycle played a special role: 1st (new moon), 7th (waxing half-moon) 14th/15th (full moon), 21st(waning half-moon) and 28th (conjunction between the moonand the sun).The day began in the evening at sunset, and the new month began at sunset with the first sighting of the lunar crescent. A month could be either hollow, 29 days, or full, 30 days, depending on when the Moon was first observed.

There is evidence for administrative schematic calendars (twelve months with 30 days each) which existed side by side with the cultic calendars. The administrative calendars were used by the offices of the great public institutions, temple and palace, and there is no indication from the 3rd millennium that these calendars were used for anything but keeping accounts.

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e.g. Alison A. Chapman, 'Marking Time: Astrology, Almanacs and English Protestantism', *Renaissance Quarterly* 60 2007, 1257-90.

[8]Ever since the first cuneiform divination texts were published and translated, interest has centred on their relation to classical and Hellenistic divination, especially astrology. A number of recent studies have identified several individual elements of Hellenistic and later astrology that probably can be traced back to specific Babylonian traditions, cf. especially the studies by F. Rochberg, *In the Path of the Moon. Babylonian Celestial Divination and Its Legacy. (Studies in Ancient Magic and Divination Vol. 6,* (Leiden: Brill, 2010). Most of these elements are themselves first attested in Babylonian sources from the 4th century BCE, and were thus relatively late developments in Babylonian divination.

[9] For an introduction to the regulation of Mesopotamian calendars, see J.M. Steele, 'Making Sense of Time',*The Oxford Handbook of Cuneiform Culture,* KarenRadner and Eleanor Robson, eds.,(Oxford: Oxford University Press, 2011), 470-485. For a survey of the cultic calendars, see Mark E. Cohen, *The Cultic Calendars of the Ancient Near East,*(Bethesda, Maryland: CDL Press, 1993).

Late in the Old Babylonian period (ca. 1730 BCE) the local calendar of Nippur became the Mesopotamian standard calendar, local variations persisted but eventually this calendar prevailed. From this period on, this was also the calendar used for calendar divination. In the first millennium BCE, the 12 normal months of the Babylonian calendar were: Nisannu, Ajjāru, Simānu, Du'ūzu, Abu, Elūlu, Tašrītu, Ara□samnu, Kislīmu, □ebētu, Šabātu, Addaru. Nisannu (I), Elūlu (VI) and Addāru (XII) could all be repeated as an intercalary month. This month would then be called for example "extra" (*atru*) Nisannu", or "later" (*arkû*) Addāru". The year itself began close to vernal equinox, and simple rules of intercalation from the astronomical compendium "Mul.Apin"[10] were based on the relative position of the Pleiades and the Moon around vernal equinox. Until the Seleucid Era, years were named for important events, after a special official appointed each year (eponym), or counted from the accession year of the individual king. The decision whether to intercalate was often made quite late and had consequences both for the performance of rituals in the public cult which followed the calendar,[11] and for secular matters such as taxation.The 2nd and 1st millennium calendar divination texts (almanacs and calendar omens) operated with an "ideal calendar" of 12 months with 30 days each, like the 3rd millennium administrative calendars, and often added information on one or more intercalary months. For divination, the ideal calendar served as the "normal" appearance of the time as an observable phenomenon. As with all forms of Babylonian divination, accordance and deviation from the "normal" appearance of a phenomenon used for divination was potentially significant, and it was scrupulously observed and interpreted according to the divination manuals.

The sources for calendar divination from the cultures of ancient Mesopotamia can be found within a number of textual genres, and in different languages, in the different periods (see table 1). The sources are of course very different in nature as well as in number.

Period	Genre	Language
Early Dynastic (Fara) **Ca. 2500-2300 BCE**	Incantations	Sumerian
Ur III and Isin dynasties **Ca. 2025-1763 BCE**	Court poetry: Hymns and praises to gods and kings.	Sumerian
Old Babylonian **Ca. 2000-1600 BCE**	Literary mythological texts Proverb Royal hemerology (7th day of 7th month) Calendar omens Astrological omens (calendric) Letters	Sumerian Sumerian Sumerian Akkadian Akkadian Akkadian
Middle Babylonian **Ca. 1600-1000 BCE**	Royal hemerology (7th day of 7th month) "The Babylonian Almanac" Thematic hemerologies Literary menology Calendar omens (*iqqur īpuš*) Astrological omens (*Enūma Anu Enlil*) Literary texts	Sumerian-Akkadian Akkadian Akkadian, Hittite Sumerian-Akkadian Akkadian, Hittite, Akkadian, Hittite Akkadian
Neo Assyrian and Neo Babylonian **Ca. 1000-539 BCE**	"The Babylonian Almanac" Literary menology Proscriptive hemerologies The Royal hemerology (*Inbu bēl ar□i*) Apotropaic hemerologies	Akkadian Sumerian-Akkadian Akkadian Akkadian Akkadian

[10] Hermann Hunger David Pingree, *MUL.APIN. An Astronomical Compendium in Cuneiform. Archiv für Orientforschung Beiheft 24*,(Horn:Verlag Ferdinand Berger und Söhne, 1989).
[11] As attested to for instance in twoletters to the Neo Assyrian king, Simo Parpola, *Letters* (SAA 10), nos.44 and 357.

	Calendar omens (*iqqur īpuš*)	Akkadian
	Astrological omens (calendric)	Akkadian
	Letters and reports	Akkadian
	Royal inscriptions	Akkadian
	Rituals	Sumerian-Akkadian
	Literary texts	Akkadian
Late Babylonian	"The Babylonian Almanac"	Akkadian
Ca. 539-150 BCE	Thematic hemerologies	Akkadian
	Zodiacal compilation texts	Akkadian (Aramaic?)
	"Kalender-texte"	Akkadian (Aramaic?)
	"Horoscopes"	Akkadian (Greek? and Aramaic?)

Table 1: Sources for Mesopotamian interpretation of the meaning of time.

Sumerian Sources for a Reified Concept of Time.

Among the very oldest indications that units of time were more than just metrics, are references in incantations from the Fara period[12] to "night" as an intentional agent, which can be made to go away by a spell. Attributing characteristics to day and night, and even tohours and minutes, is a practice that continued up until the latest periods of Mesopotamian culture, and which lived on in Mandean incantations. While this is not divination, it is certainly a reification of time, which is part and parcel of calendar divination.

The earliest indications of calendar divination,[13] in the form of choosing a certain day because of its inherent qualities, are attested in the court poetry of the third dynasty of Ur and of its cultural heirs, the kings of the first dynasty of Isin. In hymns praising gods and kings reference was made to "favourable" days, particularly days, on which the gods selected to act:

> "After the storm ……, and the month had been completed(?) for me, the god Enlil chose me by extispicy on a dayvery favourable for him. He spoke fairly to Sumer, and caused me to arise (?) from my family (?)."[14]

This poem is attributed to the king Ur-Namma(ca. 2112-2095 BCE) of the third dynasty of Ur. Enlil selected a "favourable" day to appoint him. Also the goddess Inana knew when to act:

> "Your actions are very great, and there is no god to rival you. You fetched your divine powers on a favourable day, and none of them escaped you. You have secured the kingship,

[12] See A. Livingstone, 'The Magic of Time', *Mesopotamian magic: textual, historical, and interpretative perspectives*, T. Abusch and K. van der Toorn, eds.,(Groningen: Styx, 1999), 131-137.

[13]With the exception of a couple of texts which appear to be translations from Akkadian, or late compositions, rather than original Sumerian literature, there are no Sumerian technical divination texts. The classical study of the Sumerian sources for divination is A. Falkenstein, 'Wahrsagung in der sumerischen Überlieferung',*La divination en Mésopotamie ancienne et dans les régions voisines - Travaux du Centre d'études supérieures spécialisé d'histoire des religions de Strasbourg*, (Paris: Presses Universitaires de France, 1966), 45-68. Translations of pertinent texts can be found in W.H.Ph. Römer, 1986. 'Zukunftsdeutungen in sumerischen Texten', *Texte aus der Umwelt des Alten Testaments 2* (Gütersloher Verlagshaus Gerd Mohn,1986), 17-55.

[14]^{d}en-lil$_2$-le /ud\dug$_3$-dug$_3$-ga-na maš$_2$-e /bi$_2$-in\-pad$_3$-de$_3$-en. Line 58 of "A praise poem of Ur-Namma". Transliteration and translation can be found on-line at *The Electronic Corpus of Sumerian Literature* (http://etcsl.orinst.ox.ac.uk/) sub Ur-Namma c.2.4.1.3.

> and nothing escapes from your hand. You have equal rank with the king An, and you decide destinies with him."[15]

The passage is from a hymn to Inana composed for Ur-Ninurta (1923 – 1896 BCE), 6th king of the first dynasty of Isin, who also had a hymn written to the storm god Iškur:

> "Iškur organised everything; he …… the harvest and the superior barley. He heaped up grain piles and grain stores in the fields for Ur-Ninurta. On a favourable day he sowed the seeds, he …… the wheat."[16]

The moon god here called "the white one, who walks alone" (Ašimbabbar), also knew the importance of choosing the right day:

> "First-born son of Enlil, where have you tended the people, Lord Ašimbabbar?".
> "In a place founded on a good dayand given a good name, in the place chosen in my heart, my E-mud-kura ("House, creator of the land", Nanna's cella in Ur), I, Ašimbabbar, have tended my cows."
> "First-born son of Enlil, where have you tended the people, Lord Ašimbabbar?"
> "In a place founded on a good dayand given a good name, in the place chosen in my heart, my E-mud-kura, I, Ašimbabbar, have tended my cows."[17]

The king Enlil-bani is said to act in a good month:

> "Enlil-bāni, you are the king who (…..)in a goodmonth, in a year of abundance, on a day of celebration and the elevation of the king, you are exalted."[18]

The Sumerian terms used for "favourable day" ("ud dug$_3$-ga" or "ud silim-ma") are the same as were used in the later Babylonian almanacs to define days which were generally favourable or suited for various specific undertakings. The passage quoted above uses the Sumerian term "sa$_9$", which means "to be good", but which was never used as a technical term in the later almanacs. In and by themselves, the quoted passages of course are rather weak, and perhaps the "good/favourable day" should be understood looselyas "a good day for it", or a day which fitted into the busy schedule of the gods. However, it is tempting to see the similarity in terminology with the later almanacs as an indication that calendar days were perceived to have different inherent characteristics, which were to be taken into consideration, when selecting and installing a king, building a sanctuary, sowing, and assuming dominion over the gods.

Mostof the literary mythological works composed in Sumerian are today primarily known from manuscripts, which were produced during the Old Babylonian Period. Rarely the manuscripts of these compositions, which, with few exceptions, have typically survived in an average of ten to fifty, but in some instances as many as 200 duplicates, contain completely identical versions of the same text. The Sumerian literary compositions probably go back to the 3rd millennium, but since

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[15] An adab-hymn to Inana for Ur-Ninurta, line 8 reads: "me-zuudsilim-ma-biba-e-de$_6$niĝ$_2$-namla-ba-e-da-šub." Translationslation and transliteration of the hymn can be found on-line at *The Electronic Corpus of Sumerian Literature* (http://etcsl.orinst.ox.ac.uk/) sub Ur-Ninurta D: c.2.5.6.4.

[16] An adab-hymn to Iškur for Ur-Ninurta, line 8 reads: "ud dug$_3$-ga numun-bi mu-ni-in-sig$_{10}$ gig$_2$-ga."Translationslation and transliteration of the hymn can be found on-line at *The Electronic Corpus of Sumerian Literature* (http://etcsl.orinst.ox.ac.uk/) sub Ur-Ninurta F: c.2.5.6.6.

[17] A tigi-hymn to the moon god Suen, line 26-30 read: "**ud dug$_3$-ga** [ki ĝar-ra mu dug$_3$-ga] sa$_4$-a ^{d}aš-im$_2$-[babbar-me-en] [ki šag$_4$]-ge pad$_3$-da-ĝu$_{10}$e$_2$-mud-[kur]-ra-[ĝu$_{10}$] ab$_2$-ĝu$_{10}$ ba-ši-in-ludumu-saĝ ^{d}en-lil$_2$-la$_2$ uĝ$_3$ me-a mu-u$_8$-lu en ^{d}aš-im$_2$-babbar**ud dug$_3$-ga** ki ĝar-ra mu [dug$_3$]-ga sa$_4$-a.Translation and transliteration of the hymn can be found on-line at *The Electronic Corpus of Sumerian Literature* (http://etcsl.orinst.ox.ac.uk/) sub "Nanna I": c.4.13.09.

[18] A praise poem of Enlil-bani, line 171 reads: "[**itid**] **sag$_9$** mu he$_2$-jal$_2$-la. *The Electronic Corpus of Sumerian Literature* (http://etcsl.orinst.ox.ac.uk/) sub "Enlil-bani A": c.2.5.8.1.

there are no manuscripts actually produced in the 3rd millennium, it is of course impossible to say with certainty, whether the concepts and mentality they express actually are Sumerian, or whether they reflect Old Babylonian concepts.

The belief that certain days have "favourable" qualities for a given undertaking is also present in the literary compositions. For instance in the epic about the story about a king, commonly known as "Enmerkar and the Lord of Aratta":

> "Built in magnificence with all the great powers, lustrous mount founded on a favourable day, like moonlight coming up over the land, like bright sunlight radiating over the land…."[19]

A lamentation for the destruction of the city of Nippur contains a number of references to days, which the supreme god Enlil had fixed as favourable for rebuilding the city. However, in this context, "day" should probably be understood as "point in time", and were not perceived as having special characteristics. The "good day" is mentioned to stress that Enlil not only wanted the city and its kingship restored, he had also decided when, for instance:

> "Now see! Enlil has fixed a good day in the land! He has even now ordered the day for Nibru to raise its neck to heaven! He himself has provided a good day for the E-kur to shine! He himself has raised up the day for the Ki-ur's magnificent manifestation! He himself has restored the day for Sumer and Akkad to expand! He himself has set aside the day for houses to be built and storerooms to be enclosed! He himself has brought out the day for seeds to sprout and living things to be born! He has brought out the day for building cattle pens and founding sheepfolds!"[20]

The term used is "ud zid" which perhaps should rather be translated "the right day". Later in the poem, the "day for decreeing of fates"[21]is mentioned. This could very well be a reference to a calendar date in the cultic calendar.

Otherwise, when these Sumerian literary works mention the calendar, days, and months, it is mostly to describe how time itself and the calendar were created as part of the world order by the god of wisdom, Enki:

> "Counting the days and putting the months in their houses, so as to complete the years and to submit the completed years to the assembly for a decision, taking decisions to regularise the days."[22]

Time is always high on the to-do list for world creators. The poem about the sky god An and his precocious daughter Inana describes, how the seasonal variation in daylight came to be. Exactly

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[19] "Enmekar and En-su□gir-ana", line 6-7 reads: me gal-[gal] nam-nun-na du$_3$-a kur sikil-la **ud dug$_3$-ga** ki ĝar-ra. For transliteration and translation of the full text see *The Electronic Corpus of Sumerian Literature* (http://etcsl.orinst.ox.ac.uk/) sub"Enmekar and En-su□gir-ana", c.1.8.2.4.

[20] "The lament for Nibru", the lines 247-254 read: "i$_3$-ne-eš$_2$ a$_2$-še ^{d}en-lil$_2$-le **ud zid** kalam-ma bi$_2$-in-gub-ba-am$_3$ud nibru^{ki} gu$_2$ an-še$_3$ zi-zi i$_3$-ne-eš$_2$ im-mi-in-dug$_4$-gaud zid e$_2$-kur-ra saĝ mu$_2$-mu$_2$ e-ne im-mi-in-tuku-a ud ki-ur$_3$-ra dalla ma□ e$_3$-a e-ne im-mi-in-zig$_3$-ga ud ki-en-gi ki-uri daĝal-e e-ne im-mi-in-gi$_4$-a ud e$_2$ du$_3$-du$_3$ ĝa$_2$-nun niĝin$_2$-e e-ne ib$_2$-ta-an-mar-ra ud numun i-i niĝ$_2$-zi-ĝal$_2$ u$_3$-tud e-ne ib$_2$-ta-an-e$_3$-a ud tur$_3$ du$_3$-du$_3$ amaš ki ĝa$_2$-ĝa$_2$ e-ne ib$_2$-ta-an-e$_3$-a". For transliteration and translation of the full text, see *The Electronic Corpus of Sumerian Literature* (http://etcsl.orinst.ox.ac.uk/) sub c.2.2.4

[21] Lines 315-322. See *The Electronic Corpus of Sumerian Literature* (http://etcsl.orinst.ox.ac.uk/) sub c.2.2.4.

[22] From the composition "Enki and the World Order", line 17-18. See *The Electronic Corpus of Sumerian Literature* (http://etcsl.orinst.ox.ac.uk/) sub "Enki and the world order": c.1.1.3.

how Inana caused the length of day-time to grow and wane between the equinoxes is unfortunately not preserved, but her father declares it to be so:

> "Having heard those words, An slapped his thighs in ……, his voice filled with sighs of grief: 'What has my child done? She has become greater than me! What has Inana done? She has become greater than me! From now on, the normal length ofdaylight becomes shorter, anddaylight converts to night-time. From today, when theday's watch is three units long,daylight is equal to night-time.'And now, whendaybegan, it was indeed so."[23]

A single Sumerian proverb, preserved in an Old Babylonian proverb collection, could be a reference to specific taboos associated with specific months: "In the seventh month he did not slaughter (?) a pig. In the sixth month he did not put on a new turban".[24] The Sumerian proverbs are enigmatic and we cannot be certain they refer to almanac practice, but the proverb could be a reference to religious injunctions against certain actions in certain months, as attested in the Middle Babylonian period, and perhaps also in the Old Babylonian period (see below).

These are indications, however meagre, that the calendar and time itself was imbued with meaning, that days could be chosen based on their significance and that there were rules, which guided behaviour like the later almanacs.

Calendar Divination: The Babylonian Almanac and Omen Traditions.

The Mesopotamian technical calendar divination texts may be divided into three major categories:[25]

- Almanacs (hemerologies and menologies) which are concerned with the nature of individual dates, whether days or months, and as a minimum list favourable days. They may also include prognostications, rituals and injunctions.
- Calendar omens, where the significance of actions and occurrences is described in omen format, either arranged according to phenomenon/activity or according to month. Calendar omens were collected in the standard series *Šumma Iqqur īpuš.*
- Literary menologies, which deal with general characteristics of each month, such as: associated celestial bodies and gods, religious and/or mundane events that took place in that month, the divine ruler of the month, and other mythological and mystical significance of the months.[26]

In Akkadian, the almanacs were known as *uttukku*,"Favourable Days" (written ud.meš dug$_3$.ga or syllabically *ú-tuk-ku*)or *abšegeda*, "favourable".[27] Calendar omens and almanacs were sometimes

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[23] From the composition "Inana and An", line 39-45. See *The Electronic Corpus of Sumerian Literature* (http://etcsl.orinst.ox.ac.uk/) sub "Inana and An": c.1.1.5.

[24]The Sumerian proverb collections are published by Bendt Alster, *Proverbs of Ancient Sumer I-II*. (Bethesda, Md: CDL Press, 1997). The proverb stems from proverbs collection 1 no. 172, see also *The Electronic Corpus of Sumerian Literature*(http://etcsl.orinst.ox.ac.uk/cgi-bin/etcsl.cgi?text=c.6.1*#).

[25] There are other classifications of texts relating to calendar divination, see e.g.Réne Labat, "Hemerologien," *Reallexikon der Assyriologie und Vorderasiatische Archäologie*vol. 4 (1972-75), 317-23.

[26] These are quite rare and will not be dealt with here, see Wayne Horowitz, 'VAT 17081: A Forerunner to the Menology of Astrolabe B', S. Dönmez (ed.),*DUB.SAR. É.DUB.BA Studies Presented in Honour of Veysel Donbaz,*(Istanbul: Edge Publications, 2010), 183-188.

[27] The term "ab.še.ge.da", "favourable", refers to an almanac, see StevenCole and Peter Machinist, *Letters from Priests to the Kings Esarhaddon and Assurbanipal* (SAA 13). (Helsinki: Helsinki University Press, 1998) no. 12. Erica Reiner ('Fortune Telling in Mesopotamia'*Journal of Near Eastern Studies* 19 1960, 23-35) noted the parallel to the Roman term *fasti* (originally "law" days) as a cover term for calendars and almanacs, especially concerning religious and public events.

collectively referred to simply as *biblāni* "portables", in a meaning similar to the modern term "manual".[28] Different kinds of calendar divination texts could be combined on the same manuscript, for instance calendar omens could be combined with one or more versions of the almanac, or full almanacs could be combined with lists of favourable days.[29]The combination of calendar omens with lists of favourable days and other almanacs, which is attested already in the Emar texts, demonstrates the very close relationship between the two genres. In one manuscript, such a compilation is described as: "Favourable days for doingwhat one wants, or on which any one may attain ones wish: favourable. Together with 25 lines of commentary on it. Extracts from "If he destroys and builds (*Šumma iqqur īpuš*)" based on many tablets…"[30]

Actual technical almanacs and divination texts are first attested in the Old Babylonian period. The earliest preserved manuscripts of calendar texts are two fragments of bilingual hemerologies written in phonetic Sumerian and Akkadian.[31]They are prescriptive almanacs, which list actions to be taken or avoided. One (H 83) is a royal hemerology. It describes rituals the king should perform and actions he should avoid on the 7th day of the 7th month, the month of Tašrītu. A similar bilingual text is attested from the middle Babylonian period from Dur-Kurigalzu,[32] which is however extended to cover all the first seven days of Tašrītu.[33] The first seven days of Tašrītu continued to be especially significant, and were hedged with injunctions also in the 1st millennium almanacs.[34] The 7th day was especially important and is sometimes called *sebūt sebîm*, the seventh of the seventh.[35]One of the categories applied to calendars are of course numbers, and numbers, though thoroughly abstract, also acquire generic associations and cultural specific significance. The first and seventh months, both associated with the deciding of destinies, were particularly laden with meaning.[36]According to recent psychological research, some number associations may even be universal. For instance, for some unexplained reason people tend to perceive some of the numbers belonging to the category "odd number" as more odd than others. "7" is such a prototypical odd number.[37]Seven also had magical significance outside of the almanacs. One late Old Babylonian

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[28] In Parpola, *Letters* (SAA 10) no6 r11 "*biblānu*" clearly refers to the Babylonian Almanac or the Offering Bread Hemerology. Since the line quotes a passage concerning the 15th day, *biblānu* can not mean "omens referring to the new Moon".

[29]E.g. D.J. Wiseman and J.A. Black, *Literary Texts from the Temple of Nabû* (CTN 4),(Oxford: British School of Archaeology in Iraq, 1996) nos. 56 57.

[30]K 98 + MS 2226. A photo of K 98 is published on-line on *Cuneiform Digital Library* (CDLI) subP393756 .MS 2226 is now in the Schøyen Collection. Photograph of the obverse is published:http://www.schoyencollection.com/calendars_files/ms2226.jpg

[31]They were found in a private house in the city of Meturan together with other library texts. A. Cavigneaux and F. al-Rawi, 'New Sumerian Literary Texts from Tell Haddad (Ancient Meturan): A First Survey', *Iraq* 55 1993, 91-105.

[32]IM 50964, see O.R. Gurney, 'Further Texts from Dur-Kurigalzu', *Sumer 9* 1953, 21-34.

[33] Rene Labat, 'Hemerologien',*Reallexikon der Assyriologieund Vorderasiatische Archäologie* 4 1972-75, 320.

[34] Erich Ebeling, *Keilschrifttexte aus Assur religiösen Inhalts,* (KAR). (Leipzig: J.C. Hinrichs, 1915-1923), no. 147. D.J. Wiseman and J.A. Black, *Literary Texts* (CTN 4) no.58.

[35] Cohen *Cultic Calendars*, 391.

[36] For studies of the significance of individual months according to different Mesopotamian calendars,see Stephen Langdon, *Babylonian menologies and the Semitic calendars.* (London: Published for the British Academy by Oxford University Press, 1935), Benno Landsberger *Der kultische Kalender der Babylonier und Assyrer (Leipziger Semitische Studien)*. (Leipzig: J.C. Hinrichs'sche Buchhandlung,1915) and Cohen, *Cultic Calendars*.

[37]Ilkka Pyysiainen, 'Religion and the Counter-intutive', Veikko Anttonen and Ilkka Pyysiainen (eds.), *Current Approaches in the Cognitive Science of Religion*. (London: Continuum, 2002), 110-132, 126.

love-spell for example mentions seven and seven clay pellets to be put between a woman's breasts to make her amorous,[38]and potency rituals required certain spells to be repeated 7 times.[39]

The other Old Babylonian hemerological manuscript from Meturan (H 77)[40] contains a list of mainly dietary rules warning against particular foodstuffs, but it also lists injunctions against certain actions, such as quarrelling and cloth-making. The manuscript is broken and no calendar dates are preserved. It may conceivably not have been hemerological at all, but the similarities with the later prescriptive almanacs are striking.

From the Middle Babylonian period onwards all the main genres of both almanacs and calendar omens are attested. The manuscripts from the second half of the 2nd millennium BCE represent a tradition which had not yet stabilized, as it would in the 1st millennium. Along with other Mesopotamian learning, almanacs and calendar omens were avidly studied by the neighbouring cultures. Indeed, some of the best sources for Mesopotamian divination from the Middle Babylonian period stem from attuša, Emar, Ugarit and Elam.[41]

Almanacs.

The core almanac has been dubbed the "Babylonian Almanac" by it first modern editor,[42] and the text makes its first appearance in the Middle Babylonian period.[43] Many of the later specialized almanacs were undoubtedly based on it.[44]The Babylonian Almanac existed in full, abbreviated and excerpted versions, and even though there hardly ever is complete agreement between manuscripts (see table 2), the tradition was very robust. This everyman's almanac evidently enjoyed wide popularity and is known from manuscripts spread over place and time.[45]The oldest example is a list of favourable days carved on a black stone amulet dating to the Middle Babylonian period,[46] the

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[38] Nathan Wasserman, 'From the Notebook of a Professional Exorcist', Dahlia Shehata, F. Weiershäuser and Kamran V. Zand (eds.),*Von Göttern und Menschen. Beiträge zu Literatur und Geschichte des Alten Orients. Festschrift für Brigitte Groneberg*, (Leiden, Boston: Brill, 2010), 329-349.

[39] R.D. Biggs, *ŠÀ.ZI.GA. Ancient Mesopotamian Potency Rituals*, (Locust Valley, N.Y.: J. J. Augustin, 1967), 22-23.

[40] A. Cavigneaux and F. al-Rawi, 'New Sumerian Literary Texts from Tell Haddad (Ancient Meturan): A First Survey', *Iraq* 55 1993, 91-105.

[41] For Hittite manuscripts se the on-line *Catalogue des textes hittites* sub no.546 http://www.hethport.uni-wuerzburg.de/hetkonk/hetkonk_abfrage.php?c=546. See also the discussions by J. Fincke, 'Zu den Akkadischen Hemerologien aud Hattusa (CTH 546), Teil 1. Eine Hemerologie für das "Rufen von Klagen" (*šigû šasû*) und das "Reinigen seines Gewandes" (*šubāt-su ubbubu*) KUB 4, 46 (+) KUB 43, 1',*JCS 61* 2009, 111-25 and 'Opferbrot-Hemerologien', *JCS 62*2010, 127-45.The Manuscripts from Emar are published by D. Arnaud, *Recherces au pays d'Aštata, Emar VI*, (Paris: Editions Recherche sur les Civilisations,1985-87) nos. 605-607, 610, 611, 615. For Ugarit see D. Arnaud, 'Jours et mois d'Ougarit',*Studi Micenei ed Egeo-Anatolici 32* 1993, 123-29.

[42] After the edition by Réné Labat, 'Un almanach babylonien (VR 48-49)',*Revue d'assyriologie et d'archeologie orientale* 38 1941, 13-40.

[43] For Middle Babylonian and Assyrian forerunners see René Labat, 'Un calendrier Cassite de Jours Fastes et Néfastes', *Sumer 8* 1952, 17-36, pl. 1-2 (IM 50969), L. Matouš, 'L'Almanach de Bakr-Awa', *Sumer 17* 1961, 17-66, pl. 1-2, and Ebeling *Keilschrifttexte* (KAR)no. 177.

[44]A. Livingstone, 'The Use of Magic in the Assyrian and Babylonian Hemerologies and Menologies', *Studi Epigrafici e Linguistici sul Vicino Oriente Antico 15* 1998, 59-67.

[45]1st millennium manuscripts of the Babylonian Almanac are known from Nineveh, Nimrud, Assur, Huzirīna, Sippar, and Uruk. Livingstone mentions a total of 63 "exemplars", 'The Babylonian Almanac: A Text for Specialists?', B. Groneberg and H. Spieckermann (eds.),*Die Welt der Götterbilder.(Beihefte zur Zeitschrift für die alttestamentliche Wissenschaft 376*, Berlin/New York, 2007), 85-101.

[46]The amulet is made of black stone and has a handle in the shape of a crouching lion with the text written perpendicular to the handle, it is now in the Schøyen Collection. A photograph of one side is published on-line on http://www.schoyencollection.com/calendars.html.

youngest examples stem from the Seleucid period.[47] Perhaps the amulet-shape was used to reinforce the significance of the favourable days?

The backbone of the Babylonian Almanac was the classification of certain days of the year as either completely favourable (*magir*), partly favourable (*mišil ūmi magir*), unfavourable (*ūl magir*) or dangerous (*lemnu*). The technical terms for "favourable were: ud še, aš, še.ga, ab.še.ge.da, ud.dug$_3$.ga, *ma-gir*, *še-mu,* for "unfavourable": ud nu še, nu.un.še, nu.un, še.gi.da, and for dangerous: ud.□ul.gál. Despite the many inconsistencies,[48] the classification of days was relatively stable over the centuries of transmission.

	Nisannu	Nisannu II	Ajjāru	Simānu	Du'ūzu	Abu	Elūlu
MB 1	**1**, 4 half, 6 half, **11**, 16 half, 23 half	*Omits*	2, **6**, 8, 12, **15**, 16, 20, 25, 28, 29	4, 5, 9, x, **12**, 15, 16, 21, 25, 27, 28, **30**	**1**, 3, 6?, *Break* 16? 19, **21**, 22, 26, 27, **28**, 29	**1, 2**, *Break* 12, 14, **16**	1, 3, *Break* 17, 19, 22, **27**, 29
LB	**1**, 4 half, 6 half, 8, 10, **11**, 14, 15, 23 half, *Break*	*Omits*	2, **6**, 8, 10, 12, **15**, 16, 18, 22, *Break*	2, 6, 8, 10, **12**, 15, 16, 18, 22 *Break*	**1**, 3, 7, 11, 13, 17, 19, **21** *Break*	**1, 2**, 5 half, 9, 10, 13 *Break*	1, 2, 3, 5, 7, 9, 11, **14**, 15, 18, 19, 21, 23 *Break*
MB 2	*Break*	*Break*	*Break*	*Break*	*Break* 29	*Break* 11, 14	1, 3, 4, 5, 11 *Break* 18, 22, **27**, 28, 30
MA 1	**1**, 4 half, 6 half, 9, 10, **11**, 14, 15, 22 half, 26	*Omits*	1, **6**?, 8, 10, 12, **15**, 16, 18, 20, 22, 24, 25, 28, 29, 30	1, 3, 5, 9, **12**, 13, 15, 22, 24, 26, 28, 29, **30**	**1**, 3, 6, 9, 12, 13, 17, 19, **21**, 22, 23, 26, 27, **28**, 29, 30	**1, 2**, 6 half, 10, 12, 15, 16	2, 4, 8 half, **14**, 15, 17, 22, **27**, 28, 30
Elam	*Break* 16, 23, 26	*Omits*	*Break* 17?, 20, 22, 24, 26, 28, 30	*Break* 22, 24, 26, 28, **30**	*Break* **21**, 22, 25, 27, **28**, 29 [30]	*Break* 14?, **16**, 29 [30]	*Break* **14**, 17, 19, 22, **27**
NA 1	*Break* 8, 10, **11**, 14, 16, 23 half	*Omits*	*Break* 16, 18, 20, 22, 24, 26, 28, 29, 30	*Break* 15, 16, 22, 24, 27, **30**	*Break* 19, **21**, 22, 26, 27, **28**, 29	*Break* 12, 15, **16**	*Break* **14**, 15, 17, 19, 22, **27**, 29
NA 2	4 half, 6 half *Break*	*Break*	2, **6,** 8, 10, 12, **15** *Break*	3, 5, 9, 11, **12** *Break*	*Break*	*Break*	*Break*
NA 3	*Break*	*Break*	*Break*	*Break*	*Break*	**1** *Break*	3, 4, *Break* 22, **27**, *Break*

[47] *Babylonian Records in the Library of Pierpont Morgan* vol. 4 no. 24

[48] See Labat's list of favourable days according to the Babylonian Almanac (1876-11-17, 2389) compared to a Middle Assyrian, a Late Babylonian and an Elamite list, R. Labat, 'Un almanach babylonien (VR 48-49)', *Revue de Assyriologie* 38 1941, 13-40; cf. also L. Matouš, 'L'Almanach de Bakr-Awa',*Sumer 17*1961, 17-66, pl. 1-2.

NA 4	**1** half, 3 half, 9, **1[1]**, 12, 15, 16, 19 half, 30	2, 4, 6, 7, 9, 11, 16, 17, 22, 26, 30	2, **6**, 7, 10, 12, **15**, 16, 23, 24, 25, 26, 29	3, 4, 6, 8, 9, 10, 11, [**12**, 1]3, 14, 16, 18, 19, 22, 25, 26, **30**	**1**, 2, 6, 10, 11, 12, [x 1]4?, 16 half, 20, **21**, x, 24, 25, 26, **28**, 30	*Break* x half, 10, 12, 14, **16**	*Break* 9, 10, 11, **14**, 15, 18, 22, **27**, 28 [30]

Table 2: Favourable days of the first six months of the year according to the simple version of the Babylonian Almanac. Dates on which all sources agree are marked with bold.

As demonstrated in table 2, it is difficult to see a consistent pattern. Certainly the days associated with the lunar phases, new moon (1.), half-moon waxing (6.-8.), full moon (13.-16.), half-moon waning (19-22) and invisibility (28-30) continued to have significance, as in the ancient cultic calendars, but the reason for the significance of many of dates still remains to be investigated. The days at the end of the lunar month, 28th – 30th, when the sun and the moon are in conjunction, were often considered dangerous (ud.□ul, *lemnu*). It is specified in one almanac, that these days were special because the Sun-god, Šamaš, and the moon-god, Sin, sit in council, decreeing the destinies. However, dangerous days were not necessarily ill portending.[49]

The abbreviated versions of the Babylonian Almanac merely listed the favourable days of the month, either with the full text of the prognostication and prescription for the day, or merely summarized as *magir*.[50] Both the full and the abbreviated versions were usually written in tabular format with a column dedicated to each month.

The month of Simānu	**The month of Du'ūzu**
In Simānu, day one: It is not favourable.	In Du'ūzu, day one: Wrath of Šamaš.
2: Unfavourable day.	2: Weeping.
3: Sell [grain]; a god's ill will toward a man will be resolved.	3: Release a caged bird and evil will be released from one.
[4: It is not] favourable.	4: Either attack by lion or attack by snake.
	[5: Expenditure of] grain.
	Days 6-9 missing
Days 5-11missing	10: One must not go out [on to] the street: one might experience loss.
	11: It is completely favourable.
12: The god of the street [will be favourable] in the street.	12: summons by the king
13: An important person is favourable.	13: A god is favourable, an important person is favourable.
14: It is unfavourable.	14: A god is unfavourable.
15: One will acquire a guardian spirit.	15: Eclipse of the Moon.
16: A god is favourable.	16: Outbreak of fire.
17: A lady (*bēltu*) is unfavourable.	17: A guardian spirit [is favourable; favour at law, fame.

[49] The 7th day of Nisannu II was for instance both an "ud še" and an "ud.□ul", K 2514+, see Livingstone, 'The Case of the Hemerologies: Official Cult, Learned Formulation and Popular Practice', E. Matsushima (ed.),*Official Cult and Popular Religion in the Ancient Near East. Papers of the First Colloquium on the Ancient Near East – The City and its Life held at the Middle Eastern Culture Center in Japan (Mitaka, Tokyo) March 20-22, 1992,*(Heidelberg, 1993), 97-113, p. 101.

[50] For examples see R. Labat,'Noveaux textes hémérologiques d'Assur', *Mitteilungen des Instituts für Orientforschung*5,1957, 299-345, and L. Matouš, 'L'Almanach de Bakr-Awa',*Sumer 17*1961, 17-66, pl. 1-2.(IM 63388).

18: Slander.	18: Fright on the road.
19: It is not favourable.	19: Favour by the king.
[20: Eclipse] of the Sun.	20: Unfavourable day.
[21:] One should not go by boat.	21: Favour by the king
22: Division of shares.	22: A lady is favourable: happiness.
23: It is unfavourable.	23: Revolt.
24: A lady is favourable.	24: Feud among brothers.
25: A god is unfavourable.	25: A man must not take an oath.
26: A lady is favourable.	26: Escape of a slave.
27: It is unfavourable.	27: In a lawsuit it is favourable.
28: In a lawsuit it is favourable.	28: It is completely favourable.
29: In a lawsuit it is unfavourable.	29: It is completely favourable.
30: Accident.	30: One must not barter grain.

Table 3: Example from the Babylonian Almanac.

Apart from the general Babylonian Almanac, which was directed at anybody, there were other very specialized almanacs or hemerologies, as they are called in Assyriological terminology. For instance, a hemerology concerned primarily with instructions about when to present the gods with a bread offering.[51]Some hemerologies were devoted to listing favourable and unfavourable days for specific ritual actions. All these are ritual acts which could be performed by private persons, so they were probably mainly directed at everyman, even though they sometimes refer specifically to actions the king should take. The ritual actions includedperformance of proskynesis (*šukênu*) for the gods in order in order to gain their assistance (the "Prostration Hemerology",[52] raising a cry for help to the gods (*šigû šasû*) and ritual cleaning of garments (□*ubatsu ubbubu*).[53]There were also hemerologies concerned with ritual actions to be undertaken in the event of ominous occurrences on specific dates. For instance, the "Eclipse Hemerology"[54] which prescribes actions to be taken or avoided by the king in case of a lunar eclipse occurring on the 12th, 13th or 14th day of the twelve normal months. *Enbu bēl ar□i* "Fruit (i.e. the Moon), lord of the Month" was a specialized hemerology intended for the Assyrian king only. It is the longest hemerology and formed a small series of 15 tablets with one tablet devoted to each of the twelve normal months and one to each of the three possible intercalary months.[55] So far at least, *Enbu bēl ar□i* is known only from manuscripts from Nineveh, and it may thus be a product of the scholars at the Neo-Assyrian court.

Calendar Omens

[51] A Livingstone,'The Case of the Hemerologies: Official Cult, Learned Formulation and Popular Practice', E. Matsushima (ed.),*Official Cult and Popular Religion in the Ancient Near East. Papers of the First Colloquium on the Ancient Near East – The City and its Life held at the Middle Eastern Culture Center in Japan (Mitaka, Tokyo) March 20-22, 1992,*(Heidelberg, 1993), 97-113, Maria C. Casaburi,*Ūme □ābūti "I Giorne Favorevoli" (History of the Ancient Near East / Studies VIII)*. (Padova: S.a.r.g.o.n Editrice e Libreria, 2003), J. Fincke, 'Opferbrot-Hemerologien',*Journal of Cuneiform Studies* 622010, 127-145.

[52] See A. Livingstone, 'How the common man influences the gods of Sumer', I. L. Finkel and M. J. Geller (eds.),*Sumerian Gods and Their Representations* (*Cuneiform Monographs 7*). (Groningen: STYX, 1997), 215-20, and 'The Babylonian Almanac: A Text for Specialists?',B. Groneberg and H. Spieckermann (eds.) *Die Welt der Götterbilder.(Beihefte zur Zeitschrift für die alttestamentliche Wissenschaft 376*). Berlin/New York, 85-1012007b

[53] See R. Labat, 'Jours prescrits pour la confession des péchés',*Revue de Assyriologie* 56, 1962, 1-8 and J. Fincke, 'Zu den Akkadischen Hemerologien aud Hattusa (CTH 546), Teil 1. Eine Hemerologie für das "Rufen von Klagen" (*šigû šasû*) und das "Reinigen seines Gewandes" (*šubāt-su ubbubu*) KUB 4, 46 (+) KUB 43, 1', *Journal of Cuneiform Studies 61* 2009, 111-252, p. 118.

[54] Edition Ulla Koch-Westenholz, 'Babylonian Views of Eclipses', R. Gyselen (ed.),*Démons et Merveilles d'Orient (Res Orientales 13*). (Bures-sur-Yvette: Groupe pourl'étude de la civilisation du Moyen-Orient, 2001), 71-84.

[55] There is no direct evidence for a tablet concerned with intercalary Addāru. Landsberger, (*Kultische Kalender*, 101-2) only lists manuscripts for intercalary Nisannu, Simānu, intercalary Elūlu, Ara□samnu, □ebētu, Šabātu and Addāru.

The calendar omen series had the somewhat obscure name *Šumma iqqur īpuš* ("diš *iq-qur* dù-*uš*")"If he tore down and built up".[56]A Middle Babylonian manuscript is the oldest example of calendric omens from Mesopotamia. It stems from the last centuries of the 2nd millennium and belonged to the library of a group of Seers in Babylon.[57] It contained calendar omens arranged according to month for the whole year, and is a somewhat shorter version than the standard series known from the 1st millennium. The series consisted of two parts, one arranged according to month, the other according to ominous phenomena. An example from the first part:

"If he tore down a house in Nisannu: Its foundation will not be stable.
If *ditto* in Ajjāru: This house will expand.
If *ditto* in Simānu: He will have trouble.
If *ditto* in Du'uzu: Delivery from evil.
If *ditto* in Abu: The death bed will enter the man's house."[58]

There also existed a tabular, abbreviated, form of the calendar omens, which makes the similar purpose and close relationship between calendar omens and the almanacs even more evident. The table consisted of at least 14 columns, the first listed the activity, the following 12 indicated the months, and the final column indicated whether these months were favourable for the undertaking in question. The apodoses were never quoted. The tabular form was often combined on manuscripts with tabular lists of favourable days, and even in one instance with a full version of the Babylonian Almanac.[59]

From the 1st day to the 30th day	**Nisannu**	**Ajjaru**	**Simanu**	**Du'ūzu**	**Abu**	**Ulūlu**	**Tašrītu**	**Ara□šamna**	**Kislīmu**	**□ebētu**	**Šaba□u**	**Addaru**	**Favourable**
He completed the foundation of a (new) house and placed the (first) brick:				Du'ūzu	Abu	*Break*	Tašrītu	Ara□šamna				Addaru	Favourable
The foundation of the house was laid on the 16th day:								All 12 months are not favourable					
The foundation of the house was laid in a month when an eclipse occurred:								All 12 months are not favourable					

Table 4: Tabular version of the calendar omen series *Iqqur īpuš* (VAT 13799+: 1-5).

[56] First discussed by E. Weidner, 'Ein Hauskalender aus dem alten Babylonien'*Scritti in onore di Giuseppi Furlani Rivista degli Studi Orientali 32* 1957, 185-96. R. Labat,*Un Calendrier babylonien des travaux, des signes et des mois (series Iqqur īpuš*), (Paris: Librairie Honoré, Champion, 1965) remains the standard edition even though more manuscripts have been identified.
[57] Published by Labat, *Un calendrier*,pl. 41-43, 49-50.
[58] Labat, *Un Calendrier*, § 7.
[59] D:J. Wiseman and J.A. Black, *Literary Texts* (CTN 4),no. 56.

There can be no doubt that calendar divination was practiced from the Old Babylonian period on. The Old Babylonian king Šamaši-Adad reported his arrival on a "favourable day at the end of the month of Dumuzu",[60] which must be an implicit reference to an almanac. An official of the Cassite king Burnaburiaš, reporting on work in progress, mentioned that *Elūlu* was a favourable month for moving the bed-chambers according to "a tablet",[61]undoubtedly a reference to a calendar divination text, perhaps"Babylonian Almanac". A contemporary manuscript of this was, as mentioned, found in the Cassite city Dur-Kurigalzu.[62]

Almanacs were frequently quoted by the scholars at the Neo Assyrian court, but it appears that the almanacs were relevant primarily for the timing of religious and personal matters, not for matters of state or war. Entering and concluding a treaty[63] is the only political event mentioned as timed in accordance with the almanac, and treaties and oaths were of course powerful religious rituals as well. The scholars affiliated with the Neo Assyrian court would excerpts relevant parts of almanacs for the king,[64] perhaps from memory as the inconsistencies of the passage quoted by a scholar in answer to a question from the king could indicate.[65] The scholars would advise on favourable days for concluding a treaty, for moving the royal statues, building a cella, ending the king's fast, visits from the Crown Prince and other of the princes, and a scholar taking a day off from thinking because the day is "evil".[66] The right timing of ritual activities figures prominently including the performance of: sacrifices, dream rituals, offerings, extispicy, the substitute king ritual (against the evil portended by a lunar eclipse), rituals against "cultic evil" and witchcraft, and a cleansing ritual[67] This is not surprising and indeed ritual instructions may begin with the words "in a right month, on a favourable day".

However, the days the scholars quote do not always fit the preserved hemerologies, for instance a scholar explains that Elūlu (VI) is a favourable month and that the 2nd is a good day for extispicy, a date not mentioned in either of the known lists of favourable days for extispicy.[68]

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[60] J.-M. Durand,*Archives épitolaires de Mari I. Archives Royales de Mari 26/1,*(Paris: Musée du Louvre, 1988) no. 10.
[61]The Babylonian Expedition of the University of Pennsylvania vol. 17 no. 23:14-17.
[62]R. Labat, 'Un calendrier Cassite de Jours Fastes et Néfastes', *Sumer 8* 1952, 17-36, pl. 1-2.
[63] Simo Parpola, *Letters* (SAA 10),no.379..
[64] Hermann Hunger, *Astrological Reports to Assyrian Kings* (SAA 8),(Helsinki: Helsinki University Press, 1992), nos.231, 233, 234, 235, 236.
[65] Parpola, *Letters* (SAA 10) nos.5 and 6
[66]Parpola, *Letters* (SAA 10) nos. 13, 14, 43, 52, 53, 73, 74, 190, 207, 61.
[67]Parpola, *Letters* (SAA 10) nos. 44, 59, 70, 183, 221, 254, 255, 272, 276, 277.
[68] Parpola, *Letters* (SAA 10) no. 183.

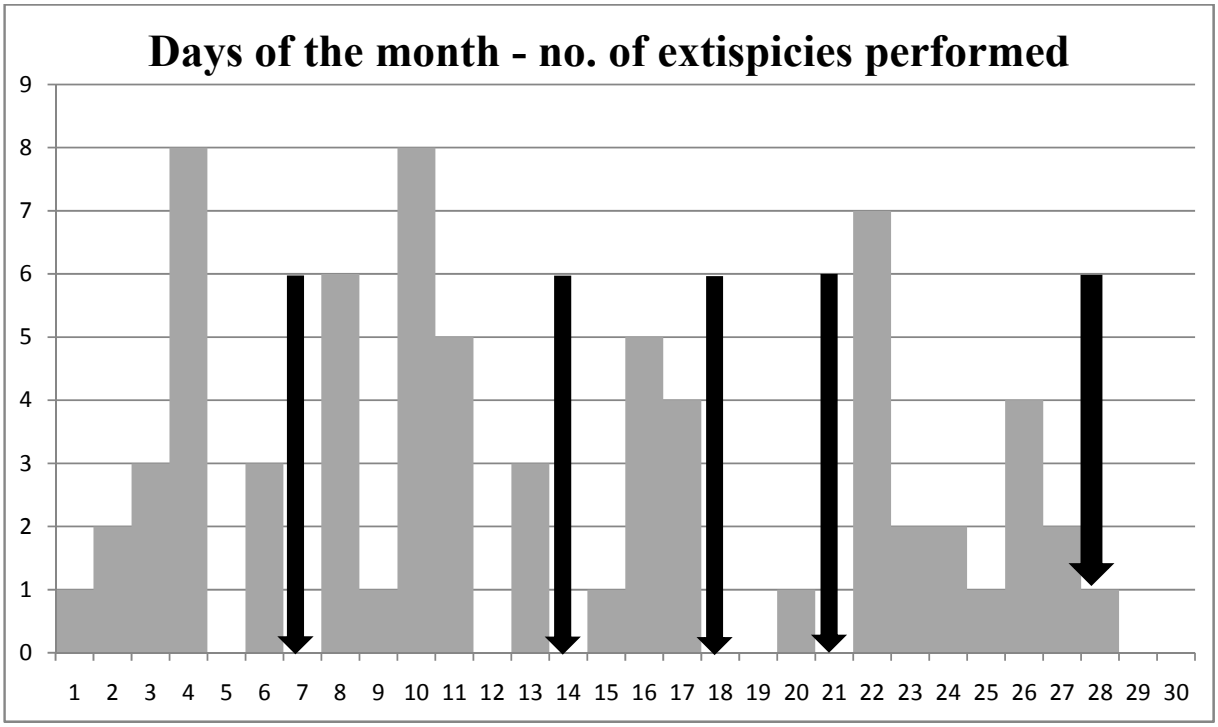

Table 5: A survey of extispicies performed according to the dates of the term of validity. The arrows indicate days not suitable for extispicy according to the Royal Hemerology.[69]

A. Livingstone has conducted a survey, which demonstrates that adherence to the regulations of the hemerologies was relatively strong, both when it came to extispicies performed for the king, and, to a lesser degree, when making a transaction at the market place.[70]

The Neo Assyrian royal inscriptions frequently refer to actions undertaken at a favourable time. They present a picture of the actual use of calendar divination similar to that of the royal correspondence, discussed above. For instance, Esarhaddon mentions the timing of symbolically charged political events, and especially the construction of both religious and palatial buildings. He records how he entered the palace of the crown prince in a "favourable month, on an auspicious day", and how he reclaimed his father's throne after quelling the rebellion against him, "in the favourable month Addāru on the 8th, the *eššēšu*-festival of Nabû". He timed the construction work on his palace, and laid the foundations to Esagil, the temple Sin and Shamash, and temples of Aššur in the same manner. Also the production of cult statues had to be timed carefully in accordance with the almanac.[71]

Calendar and Zodiac

The almanacs and calendar omens continued to be copied, but in the late first millennium new divination genres developed breaking free of the traditional formats. The most significant change

[69] The table is based on A. Livingstone, 'The case of the hemerologies' (1993) and Beate Pongratz-Leisten, *Herrschaftwissen in Mesopotamien. Formen der Kommunikation zwischen Gott und König im 2. und 1. Jahrtausend v.Chr.* (SAAS 10), (Helsinki: Helsinki University Press, 1999) with minor revisions. The extispicy reports are published by Ivan Starr, *Queries to the Sungod* (SAA 4), (Helsinki: Helsinki University Press, 1990).
[70] A. Livingstone, 'The case of the Hemerologies' (1993).
[71] The inscriptions of Esarhaddon are available in a searchable version on-line at *The Royal Inscriptions of the Neo-Assyrian Period* (RINAP) http://oracc.museum.upenn.edu/rinap/rinap4/corpus/.

was probably caused by the introduction of the Zodiac.[72] A heterogeneous group of astrological texts turn around the subdivision of the Zodiac, the micro-zodiac. The micro-zodiac was used to indicate rising times for sections of the ecliptic,[73] and as a categorizing device for combining astrological lore with other magical and religious traditions. Two principles are attested in cuneiform sources: The simple micro-zodiac (**A**) and the dodekatemoria (**B**) scheme.[74]

Both principles of correlating one sign of the Zodiac with another of course open up more possibilities for interpretation, since any given phenomena can be correlated with two signs of the Zodiac. Another wayof multiplying and correlating positions and occurrences appears to be attested in the so-called "Calendar Texts." Most of the Calendar Texts do not even mention any celestial bodies or signs of the Zodiac. Each entry in a Calendar Text begins with two pairs of integer numbers, the "calendar scheme", which Brack-Bernsen and Steele have shown represents a procedure by which each day of an ideal year of 360 days is correlated with a specific degree of the ecliptic different from the position of the Sun. At the same time it can be used to determine the ideal position of the moon in the dodekatemoria on a given calendar date, or vice versa, according to an ideal calendar of 360 days. The integers were combined with lists of trees, stones, plants, topographical names, prescriptions, prognostications and rituals, but the list of integers also existed as an independent series and is known in manuscripts dating to the late 5th century BCE.[75] Since it combines a scheme for the calculation of the dodekatemoria with the "calendar scheme", the manuscript BM 47851[76] forms a link between the micro-zodiacal texts and the Calendar Texts. A further connection is shown by two texts from Uruk.[77] They belonged to a series of originally twelve tablets which correlated each day of each month with a sign of the Zodiac, a degree therein, and ingredients for a magical/medical ointment. The association between zodiacal signs and ingredients is constant and related to the representation of the sign. The zodiacal sign Leo is thus associated with lion's blood, lion's fat or lion's hair, Aries with sheep's blood, sheep's fat or sheep's hair. What ailments these ointments were intended to remedy is however not explained.

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[72] Lis Brack-Bernsenand Hermann Hunger, 'The Babylonian Zodiac: Speculations on its Invention and Significance',*Centaurus 41* 1999, 280-292.

[73] A 3427, BM 34713, BM 34664, see F. Rochberg, 'A Babylonian Rising Times Scheme in Non-Tabular Astronomical Texts', C. Burnett, Hogendijk Plofker and Yano (eds.), *Studies in the History of the Exact Sciences in Honour of David Pingree,*(Leiden and Boston: Brill,2004), 56-94.

[74]In the simple microzodiac(**A**) each zodiacal sign was itself simply divided into twelve parts named after the Zodiac. The sign was simply subdivided into twelve sections (*zittu*) of 2½^{o} each beginning with the name of the sign in case. According to this scheme the first section of Taurus was Taurus and the last was Aries. A planet with the longitude 24° of Aries will be in the microzodiacal section Capricorn, since the microzodiacal Capricorn begins in 22½^{o} of Aries. The dodekatemoria scheme (**B**) for calculating the dodekatemoria gave a different result from the simple microzodiac. Here the degrees of the position were multiplied with 12 and the sum then added to the original position – the same as multiplying with 13. Thus the dodekatemorion of a planet in Aries with the longitude 24° will be Aquariaus according to the dodekatemoria scheme (**B**), since 288° + 24° = 312°. This last scheme emulates the movements of the Moon and the Sun. During a lunar month the Moon passes through 13 zodiacal signs as the Sun moves through one. Thus the Moon in the month of Nisannu (I) will start and end the month in Aries assuming new year at new Moon on 0° Aries. The dodekatemoria is one of the elements that were certainly incorporated into Hellenistic astrology, see F. Rochberg,'Elements of the Babylonian Contribution to Hellenistic Astrology',*Journal of the American Oriental Society* 108, 1987, 51-62.

[75]BM 96258 and BM 96293, Lis Brack-Bernsen,and J.M. Steele, 'Babylonian Mathemagics: Two Astronomical-Astrological Texts', C. Burnett, Hogendijk Plofker and Yano (eds.), *Studies in the History of the Exact Sciences in Honour of David Pingree,*(Leiden and Boston: Brill,. 2004), 95-125.

[76] Hermann Hunger, 'Ein astrologisches Zahlenschema',*Wiener Zeitschrift für die Kunde des Morgenlandes 86*1996, 191-97.

[77] E. von Weiher, *Spätbabylonische Texte from Uruk,* (Berlin: Gebr. Mann Verlag, 1988)nos. 104 and 105

The micro-zodiacal texts typically correlated the signs with various cultic, divinatory, therapeutic, dietary, apotropaic, or other religious and magical staples. For instance, in the compilation BM 33535,[78] each sign of a micro-zodiac is described by five sections. The first section combines the micro-zodiacal sign with a place, kinds of tree, plants, stone and other materials used for therapy. The second section combines it with a cultic event, the third with instructions for a kind of divination (making certain gods speak that month), the fourth with a recipe for an amulet:

> "(1.) Gemini of Sagittarius. The city of Lagaš [*break*], white *kiškanû*-tree, red *kiškanû*-tree [*break*], *amīlānu*-plant, *engisû*-stone, *anza□□u*-glass which is multiplied by two …-stone. SA:A. (2.) Gemini of Sagittarius: Day of the city god. The twins Sin and Shamash. Nergal. Feast of Ninurta. (3.) In Simānu from the 1st to the 30th day, let the man wash himself, let him anoint himself with the oil of the *šimeššalû*-plant, let him be clothed with a blanket, let him put on a sandal, let him eat bread of *arsuppu*-barley, let him drink beer of *arsuppu*-barley, let him put on a headdress(?) let him sleep on the roof, let him not be clothed … (then) the gods of the night will speak to him. (4.) You wrap (an amulet) in a piece of donkey's hide, with a donkey's sinew, with a thread of red wool, you place it on his neck. (5.) Gemini: □*alub*-tree, …-bird."[79]

So far just nine[80] micro-zodiacal texts of this type are known. Six of these[81] belonged to a series of originally twelve sections treated the zodiacal signs and corresponding micro-zodiac in considerable detail. The series was named the "Gestirn-Darstellung" texts by Weidner because some of the manuscripts have drawings of stars and constellations. The series combined eclipse omens and almanacs,both known as independent texts from older other sources, with the micro-zodiacal subsections.

The amount of late astrological texts is dwarfed by the manuscripts of the traditional divinations texts (*Enūma Anu Enlil*, its scholia) and the epistolary evidence for the practice of traditional celestial divination. Most of the manuscripts are fragmentary and only few passages are known from more than one source. There is some evidence that divination texts could be written on parchment, *magallatu* and specialized parchment scribes are known from seleucid Uruk.[82]*Magallatu* seems to denote scholarly or literary texts of a length to justify the use of a parchment scroll. The colophons of excerpts on clay of the omen compendia *Šumma Izbu* and of commentaries to *Šumma ālu* mention parchment scrolls as their source. Normally, one would expect parchment texts to be in the alphabetic scripts of Aramaic or Greek,and it is not unreasonable to suppose that also calendar divination and astrology of the new kind were written en Aramaic and Greek on perishable materials.

Conclusion.

The earliest sources indicate that units of time could be perceived as having inherent characteristics, such as favourable and unfavourable, and could even be personified and managed by magic. This concept was perpetuated up until the centuries around the beginning of the Common Era. Reification of time appears to be a human universal, but in the case of Mesopotamia, it developed

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[78] Hermann Hunger, 'How to Make the Gods Speak: A Late Babylonian Tablet Related to the Microzodiak', Martha Roth, Farber, Stolper and Bechtolsheim (eds.),*Studies Presented to Robert D. Biggs June 4, 2004* (Chicago: The Oriental Institute, 2007), 141-52.

[79] Hermann Hunger, 'How to Make the Gods Speak', BM 33535:1-16.

[80] Listed by Hunger, 'How to Make the Gods Speak', 145.

[81]E.F. Weidner, *Gestirn-Darstellungen auf babylonischen Tontafeln. (Östereichische Akademie der Wissenschaften, Philos.histor. Kl. S.B. 254*),(Graz: Hermann Böhlaus Nachf., 1967).

[82] Philippe Clancier, 'Les scribes sur parchemin du temple d'Anu', *Revue d'Assyriologie* 99 2005, 85-104.

into a form of calendar divination, where the significance depended on inherent religious values associated with entities of time itself (month, determining destinies, beginning/end/middle of lunar month, cultic calendar) which were only linked to astronomical phenomena in so far as observations of the moon determined the beginning of the day and the month, and the sun determined the seasons, and the movement of the celestial sphere determined the year From multiple local cultic calendar, a universal calendar was introduced in the Old Babylonian period. The calendar was used for divination, in the sense that it was consulted in order to find a suitable and auspicious time for various enterprises, as well as for avoiding upsetting the gods by behaving in an untimely manner. With the introduction of the Zodiac calendar divination became separated from its original context. The moon retained its traditional significance, but the meaning of time was no longer derived solely from the significance of individual dates, based on the lunar and cultic calendar. Days and months took on meaning from zodiacal signs and planets as well. In other words, Mesopotamian calendar divination went from being basically a cultural specific list of "good days" to a system that could be universally applied. The Zodiac – as the versatile and general tool it is – was the ideal vehicle for transmission of ideas and concepts into Hellenistic culture. As mentioned, even today, many forms of modern forms of calendar divination have close links with zodiacal astrology.