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Cultic Calendar and Psychology of Time: Elements of Common Semantics in Explanatory and Astrological Texts of Ancient Mesopotamia¹

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Abstract: This article compares two groups of texts: Neo-Assyrian menologies (monthly predictions) and zodiacal horoscopes of the Late Babylonian period. Semantic relationships of both with myths and rituals of the Sumerian and Babylonian cultic calendar are established. The data of cuneiform texts are compared with the data of modern psychophysiology and chronopsychology (X. Gonda and her group). It is assumed that the scribes of the Eighth to Fourth centuries BC reported to the circle of healers and astrologers that diseases of people born in different seasons depended on their temperament and the state of their nervous system. Now we can say that for modern man the rational core of Babylonian astrology lies in the fact that the causes of various changes in psychophysical conditions are not ascribed to constellations, but to geoclimatic periods of the year when these constellations appear. The Babylonians believed that the characteristics of physical and mental development of a person born in a particular period of the year coincide with sensations and symptoms that overtake all people at the same time. Whether this hypothesis is right or wrong is a puzzle that modern science has yet to solve.

Keywords: Huzirina, Uruk, menologies, horoscopes, chronopsychology.

Until now, the calendars of the peoples of the ancient Near East have been studied in only one aspect - in terms of their relation to the economic and political activities of citizens. Calendar periods delineate the basic processes in the production of food (cereals and vegetables). Calendars are the most important markers for rites connected with confirmation of the status of the rulers or with the approval of the new rulers on the throne. Calendars feature celebrations from all the other events held in the cities of the country, and thus ensure the

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independence of the city in the politico-religious aspect (Stern 2012: 2). In short, the calendar is a system of conventional signs adopted by society to mark and highlight their industrial and political activities. We cannot say the calendar of the ancient East has been ignored by religious scholars and ethnographers. Calendars may be understood in their works as symbolic systems related to the perception of the numinous (M. Eliade, T. Jacobsen) or to the regulation of sex-age ritual activities (the calendar as a set of rites of passage; A. van Gennep, V. Y. Propp). In the latter case, consideration of the calendar does not go beyond its representation as a conventional system, designed to mark an abstract activity.

A quite different approach to the problem of time was demonstrated by the founder of psychology of time (or chronopsychology), Paul Fraisse. In his view, time is, above all, rhythmically specified by the order of different aspects: a) cosmological (solar, lunar, and seasonal rhythms); b) biological (rhythms of the heart, brain, respiratory, hormonal reproduction, body temperature, sleep and wakefulness in plants, animals and humans); c) perceptual, i.e., time as a temporal experience (so-called rhythm perception of time) (summarized as in Roeckelein 2008: 33). Temporal experience is a characteristic feature of any living creature, because all creatures eat, breathe, grow, experience emotions and have consciousness².

The psychology of time can give us the key to issues not previously investigated in the history of the Ancient Eastern calendars. A symbolic calendar system, which by its nature is not arbitrary and is not abstract, caused by the effects of cosmo-biological rhythms on the formation of the temporal experience of the farmers of the Ancient Near East. It is necessary to study its semantics in psychophysiological terms – that is, as a series of psycho-emotional states, caused by the change of seasons and the monthly adjustment period. Where the four seasons of nature are expressed with sufficient clarity, transformations of collective consciousness can be traced back, compared to areas with only two seasons. And the culture of the ancient East with its two half-year and three or four seasons, fortunately, gives us the most abundant material.

The present paper proposes to consider the data of Assyrian-Babylonian explanatory texts, commenting on the calendar months and calendar holidays (Livingstone 1986; Emelianov 1999, 2014a, 2014b, 2014c; Horowitz 2014; Livingstone 2013), Neo-Assyrian magical prescriptions (Geller 2014) and Babylonian personal horoscopes (Rochberg 1998; Wee 2015) in terms of the

²Nowadays the main question of chronobiology and chronopsychology is precisely formulated by J. Zulley: “Chronobiology is the science and research of the rhythmic development of biological processes over time, from monocellular protozoa to pigeons and people. It looks at how time on earth directly influences biological functions, how humankind as a biological entity has adapted to its time on earth, and whether timescales are built into the intrinsic development plans of humans. It also examines whether we are at the mercy and subjugation of our time on earth or whether we are practically part-autonomous: do we have an “internal clock” (i.e., do we possess intrinsic control over our own organism in temporal terms), or do our biological timescales depend wholly on extrinsic factors to make do with the time spent on earth?” (Zulley 2009: 6). We also know modern investigations on the problems of seasonal models of behavior (Ennis & McConville 2004) and correspondence between seasonality and human longevity (Gavrilov & Gavrilova 2011).

psychology of time. Basic sources are the texts of XIV-III centuries BC³, which reveal a common semantics associated with the mythological representations of a certain period of cultic calendar. We will show that the mythological ideas, reproduced in a collective ritual, were semantically identical to predictions of individual destiny for a child born in the month, when the ritual was performed.

From Ritual Hero to Individual Character of Newborn: Nisanû as Nisannu

The first month of the Standard Babylonian calendar (March-April) was called, in Sumerian, *bara₂-zag-gar* (March-April): ‘(re-establishing) the dais in shrine’ = Akkadian *Nisannu* (from Sumerian *nig₂-sag*), “the first offering” (Month of An and Enlil). According to explanatory texts, in this month the king is raised up, the king is installed (Good Start of An and Enlil). On the 5th of Nisan the *akitu*-festival of Marduk is held (KAV 218 I: 1-11; Emelianov 1999: 50-51; Horowitz 2014: 44, 57). The first month was also called *rēš šatti* “the head of the year” (CAD N/2: 266). Enthronement of the king was a result of the Great Battle between the Young Hero and the Chaos (= the Old Hero), esp. Marduk and Tiamat. *Nisannu* was also associated with Dumuzi and Kingu, two god-victims of Babylonian mythology (STC I 217: 9; Emelianov 1999: 183).

On the 4th of *Nisannu*, the whole text of Babylonian epic about the Great Battle of Marduk and Tiamat was recited near the statue of Marduk: “[Whe]n they have done this, [after the] second meal in the late afternoon, the high priest of Etuša will ‘raise’ (?) *Enūma eliš* [from its beginning to its end [to Bel]]. While he ‘raises’ *Enūma eliš* to Bel, the front part of Anu’s tiara and Enlil’s seat will remain covered” (Linssen 2004: 231).

On the 5th of *Nisannu*, priest named *šešgallu* takes the signs of power from the king, and puts him on his knees, pulling his ears and making his cheeks tremble:

“When (the king) has arrived [before] Bel, the high priest will go out (of the cella) and lift up the scepter, the loop, the mace [of the king(?)]. He will (also) lift up the Crown of Kingship. He will make them enter [before Be]l (and), in front of Bel, he will place them [on] a seat. He will go out and strike the cheek of the king. He will place [the king(?)] behind him. He will make him enter before Bel. [After this(?)] he will pull his ears, make him kneel on the ground. [Together w]ith(?) the king he will say this once: [I have not] sinned, lord of the lands, I have not neglected your divinity, [I have not] ruined Babylon, I have not ordered its dissolution, [I have not] made Esagila tremble, I have not forgotten its rites, [I have not] struck the cheek of any privileged subject, [...] I have [not] brought about their humiliation, [I have been taking ca]re of Babylon, I have not destroyed its outer walls!” (Linssen 2004: 231-232)

³See detailed description of all cuneiform sources connected to divination in Koch 2015.

We also know about the magical rite of releasing birds in *Nisannu*:

In Nisan, the 1st day, he should purify and cleanse himself...
You go to the house of the bird-catcher and buy two doves, male and female.
Before Shamash you make a judgement for them. Like a god he will achieve his wish.
(You say) "Shamash, you are the judge of heaven and earth,
The mighty fist of god or goddess, king, boss or prince, unclench for me!"
He releases the male to the east, the female to the west.
(Livingstone 2000: 380)

In the Neo-Assyrian menology *Iqqur-ipuš* one can see the same picture:

If a child is born in the month of Nisan, he will disrupt his father's house with his feet.
If in the month of Nisan the king ritual will pass, he will receive the name (= he will become famous).
(Labat 1965, no. 64: 38)⁴.

Analyzing the rituals known to us of the month of *Nisannu*, we observe the following mythological motifs: a) the victory of the young hero in battle with the elder gods; b) bringing the first victim; c) temporary humiliation of the ruler; d) his establishment on the throne; e) the beginning of a new world. As for releasing birds, it should be recognized that a bird takes away the sins of a person accumulated over a year or the winter period. But we should not forget the connection of the New Year with the rite of enthronement of the king. The sources of the first millennium point to a temporary humiliation of the ruler before the new introduction to the throne. In the days of the New Year, the ruler is at his most vulnerable, and more likely to be influenced by someone else's will, because his status is in doubt. This must be the reason that a servant or a subordinate could have power over the head immediately after the New Year.

Among the Neo-Assyrian *Namburbi* texts there is one dedicated to help parents against the evil of a son born in *Nisannu*:

"If a baby is born in *Nisannu*, between day 1 and day 30, by his feet his father's house will be disrupted - either the Hand of his god, or the Hand of the king will reach his father and his mother. As to the baby: it will fare well in future days. *Namburbi*, in order that the evil of that baby does not reach his father and mother, in order to make that disaster go by, that that evil goes away, elsewhere, and not comes near to his father and his mother.

Its ritual: In the morning, in a secluded place on the plain, you wipe the ground, you sprinkle holy water, you set up three offering tables for (the gods) Ea, Shamash, and Asalluhi, you strew dates, flour, you put (there) honey-cake, date syrup, ghee. You set up a cultic water vessel, you libate beer. Behind the apparatus,

⁴ See also Beckman 1983: 13.

you strew garden plants. You sacrifice a sheep, you draw a curtain, you pour down a heap of flour. That man shall stand behind the apparatus, and speak like this:

- “Ea, Shamash and Asalluhi, glorious gods,
 16. High judges, appointing destinies,
 17. Constructors of the plans, living in the sky of Anu!
 18. You determine the destinies of the living,
 19. You draw plans of the living!
 20. Out of your mouth is life, the deed of your mouth is life!
 21. I, your servant, stand before you, I look at you,
 22. I glorify you, I honor you!
 23. I’m afraid, I’m afraid of child born in Nisan,
 24. I’m terrified. Let his Evil do not touch me and my house,
 25. Let him not come near, let him not draw near, let him not overtake me!
 May it cross the river, let it cross the mountains!
 26. For 3,600 miles from my body (let it be)! Like smoke,
 Let it soar into the sky!
 27. Like a tamarisk torn apart, let it will not come back to its place!
 28. From my body let it go! Tamarisk let me purify,
 29. Let Soap-root me wash, let the Earth take (Evil) from me!
 30. Let the Earth pity me, turn (Evil) with its radiance!
 31. A prosperous day, a joyful month of abundance (= fullness) of the year,
 let me bring it!
 32. Day and ..., let the Evil directed at me be expelled!
 33. Ea, Shamash and Marduk, come to my aid:
 34. Turn the Evil of the child born in Nisan for good to me!"
 35. This he read three times before Shamash, before the River he will speak
 like this:
 36. "You, the River who created everything! When the great gods dug you,
 37. On your shores good was established, Ea settled within you.
 38. He gave you a grass of anger, radiance (and) fear, “The Incomparable
 Flood” called it.
 39. Thou art a Flood born to be incomparable, for which looks Enbilulu,
 your irrigator!
 40. You are perfect, before you the court is judged! You are great, you are
 high,
 You are righteous!
 41. Your water puts in order (everything)! I’m afraid, I’m afraid of the Evil
 of a child born in Nisan,
 42. I’m terrified! Oh River, take it from me,
 43. Let the river regret me! For what is in it, let it for merit will receive!
 44. May I let down into her ... Let me see your goodness:
 45. Make my days long, give me life! "
 46. He will read this incantation before the River, he will return to his house.
 That evil has been untangled”.
- (Maul 1994: 401-406; Stol 2000: 95).

M. Stol also quoted a special ritual to delay the labor of childbirth to *Ayaru*. One speech of the priest was addressed to Sin (the moon), the other to Shamash (the sun). A woman asks them that she might carry her child past *Nisannu* month (Stol 2000: 94). Why not give birth in Nisan? Because this "March-April-child", as it is said in the text, in future will "disrupt the house of his father". He is too aggressive and does not respect traditions. And why is he like that? The answer to this can be seen already in the New Year's ritual of *Nisannu*. On the fourth day of this month, an epic about the creation of the world is recited, the hero of which god Marduk destroyed the entire early generation of gods, divided the oldest goddess Tiamat in two and created a new world from her parts. And the compilers of the incantation believed that any child born during Marduk time borrows his features. But now let us ask: why is Marduk so aggressive in the month of *Nisannu*? And here it is necessary to address the phenomena of nature, a particular feature for Mesopotamia in March-April. First of all, is the spring flood, portrayed in literary texts as "the angry heart of an enraged god", sweeping away everything in its path. To parents of the spring child, who is called the special word *Nisannû* (fem. *Nisannîtu*) "offspring of Nisan"⁵, it is recommended to bring sacrifice to the god of the River and pacify him. As a result, the character of their child will be quieter.

Thus, secondly, there is nothing mystical in the text about the desire to delay childbirth. It conveys an association between the behavior of nature in a certain month and the behavior of a person born this month. According to such ideas, the child of *Nisannu* is Marduk who destroys the old world of his parents and establishes his new space of life. He is also Kingu and Dumuzi, a victim in the new world. Thirdly, he is the king temporarily humiliated before his new enthronement in his city.

On the contrary, child born in *Tašrîtu* (September-October) will be lucky; but at this time the rite of enthronement is prohibited:

If a child is born in the month of *Tašrîtu*, this child will prosper, his heart will be satisfied for long days.

If the king will pass the ritual in the month of *Tašrîtu*, it is unfavorable to him, he will be withdrawn (from his throne).

(Labat 1965: 38, 61).

This omen corresponds to the second ritual of releasing birds performed in *Tašrîtu*. It is known from *Bīt salā' mē* edited by C. Ambos (Ambos 2009: 240-251):

A2 15'. When in the month of *Tašrîtu* (ritual) "House of water sprinkling" you're performing,

16'. On the 4th day of *Tašrîtu* king holds 7 *marratu*-birds,

17'. the magician pronounces the incantation "You heavenly bird, creature of Anu"

18'. For three times, and to the Heaven he releases them.

(Ambos 2009: 240)

⁵See also Old Babylonian PN *Warad-Ni-sa-nim*, IR₃-*Ni-sa-nu-um* 'slave of Nisan' (CAD N/2: 266).

Releasing the birds captured in *Tašrītu* aims at self-cleansing during the king's imprisonment. The common point of the two rites is a temporary setback in the rights of the king. On the 4-7th of *Tašrītu*, the same *šešgallu* takes away the signs of his power and enters him into a *šutukku*-house temporarily deprived of the sun.

From the texts it is clear that for the ritual actions and representations of spring, aggression results in expansion (victory of the king and hero over a villain, exorcism, holy matrimony) and supports the temporary humiliation of the king. This is also attributed to the aggression of the child born in spring. In contrast, in autumn one can see the rite of purification of the king and the country, the return of the unclean, the imprisonment of the king, fasting, sacrifices to ancestors, gods and underground prison court (Casaburi 2000; Cavigneaux & Donbaz 2007). Children born in this period are calm and lucky in their relations with other people.

This is especially obvious in the example of the two rites of releasing birds. Releasing the birds in *Nisannu* is intended to affect the elder or ruler, to impose his will, to enforce and fulfill people's desires (expansion). The aim of releasing captured birds in *Tašrītu* is to enable purification during the king's imprisonment. Such behaviors are intertwined with physiological processes. In spring, metabolism is accelerated, dramatically driven by the extra amount of light, there is a surge of hormonal activity (e.g., thyroid strenuously produces thyroxine); the work of internal organs cannot keep pace with these processes, resulting in an aggressive agitation, leading in some cases to a crisis in mental activity. In autumn, all hormonal processes are slowed down, the amount of melatonin increases, which protects the body from stress, the amount of light decreases, the body begins to prepare for the cold season. This makes people apathetic, depressive, lacking in energy and attention, creates slow reactions, and facilitates transition into auto-aggressive states (Ennis & McConville 2004; Weil & Nelson 2012). In particular, Ennis and McConville experimentally proved that "disturbances in mood are the main psychological component of seasonality" and examined "the hypothesis that elevated levels of mood variability, decreased average levels of positive affect and increased average levels of negative affect may be characteristic of the overall mood profile associated with acute seasonal disturbances in mood and behavior" (Ennis & McConville 2004: 1305). The study made it clear that "mood profile co-varied with severity of seasonal disturbances in mood and behavior. While seasonality was unrelated to average mood levels, it was significantly positively associated with mood variability" (*ibid.*).

The research shows that each season is positively correlated with variability of mood in the light and in the dark times of the year (*ibid.*). The ritual, since it symbolizes human behavior, is an effective means of regulating and expressing these seasonal shifts in people's motivations and emotions. The Spring New Year rites symbolically release and even sublimate the feelings of expansion and ambition, manifested in spring. On the contrary, the autumn New Year rites symbolically sublimate the human desire to judge the self, or even self-destruct in suicide. Interestingly, the properties of collective behavior in a particular season were transferred by the inhabitants of ancient Mesopotamia to the fate of children born in this period of the year. It seems to us that the cause of astrological concepts in this culture was precisely the transferring of calendar semantics to the typical

events which occurred at the time of the corresponding monthly rites (including the individual fate of newborns).

Monthly ritual – zodiac – microcosm

How does the semantics of individual horoscope predictions arise? In order to answer, it is necessary to study in parallel collections of monthly prescriptions and predictions (menologies) and horoscopes. Then it becomes clear how the asemantic constellations of the lunar and solar zodiac took on the meanings of the months in which they ascended, and how the meanings of collective rituals were extended to representations about the fate of a person born in the same month of the year. To understand this means not only to understand the rational basis of astrology itself as a part of culture, but also to connect astrology with that intellectual revolution of the VIII-IV centuries BC, which gave the doctrine of elements and atomism in physics, and the first attempts to understand the individual being of man in medicine and psychology (Rochberg 2010; Emelianov 2014b; Geller 2014).

In the last two years, there have been two very important discoveries in the field of communication between calendar and astrology. First of all, M. Geller published a Neo-Assyrian menology with magical prescriptions in his book on Babylonian medicine (Geller 2014). The second significant discovery was the publication of the most ancient microcosm description known to us. It is the Late Babylonian tablet from the British Museum, in which each sign of the zodiac is correlated with a part of the human body (Wee 2015). Both these achievements serve as important tools for our study of the cultic calendar and zodiac as a single semantic-symbolic system related to human psychophysiology.

In order to systematically compare menologies and astrological predictions, let us now consider several groups of texts:

Abbreviations and the texts considered:

Explanatory Texts (ET): KAV 218, OECT XI 69+70 and parallels

Magical Prescriptions (MP): Inurta-mušeziB STT 300; Geller 2014: 47-57

Astrological Predictions (AP): LBAT 1593 II; Reiner 2000: 423;

Iqišaya SpTU II 43

Microcosm: BM 56605; Wee 2015: 227-232

Month I = sign 1

ET: bara₂-za₃-gar (March-April) ‘(re-establishing) the dais in shrine’ = *Nisannu* “the first offering”. Month of An and Enlil. The king is raised up, the king is installed. Good Start of An and Enlil. On the 5th of *Nisannu* the *akitu*-festival of Marduk is held (KAV 218 I: 1-11; Emelianov 1999: 50-51; Horowitz 2014: 44, 57). The first month also was called *rēš šatti* “the head of the year”. Enthronement as a result of the Great Battle between the Young Hero and the Chaos (= the Old Hero), esp. Marduk and Tiamat. The dais

here is a symbol of stable, solid earth in the middle of the Abyss and, therefore, a symbol of the beginning of the New World.

MP (month): “[If in month Nisannu on the 10th day] at the usual time you perform (the spells) for ‘changing someone’s mind’⁶, on the 21st day (the spells) for ‘overturning a judgement’, on the 21st day (the spells) for ‘breaking a spell’; (the spells) ‘for illness not to approach a man’; (the spells) for curing the head; (the spells) for getting rid of *mania*?; (the spells) for curing wounds; (the spells) for stopping menstrual bleeding; (or the spells) for ‘evil not to approach the house’, it will pay off” (STT 300: 4-6).

Treatment of the head, the expulsion of mania, wound healing, stop of menstrual blood.

AP (sign): LU₂.HUNGA “volunteer” > LU = *udu* “ram” (Kurtik 2007: 276); “death in family” (SpTU II 43: rev. 3).

Microcosm: SAG ‘head’ (BM 56605 rev. row 2 col. 1; Wee 2015: 227)⁸.

Month II = sign 2

ET: *gu*₄-*si*-*su*₃/*sa*₂ ‘turning/direction of the oxen’ = *Ayaru* “youth who is opposed to somebody”⁹. Month of Ninurta. The earth is broken up, the oxen are set straight, the watered ground is opened, the plows are washed. The Great Battle of Ninurta and Asag. Meeting of the Young Hero in the gates of Nippur and his Sacred Marriage rite connected to plowing the earth. In that time Ninurta became ensigal and engar of his father Enlil (KAV 218 I: 12-24; OECT XI 69+70 I: 32’-34’, 35’-37’; Emelianov 1999: 58-61; Horowitz 2014: 44, 57-60).

MP (month): “If in the month Ayaru on the 10th day at the usual time, you perform (the spells) for ‘loosening the grasp’¹⁰, on the 21st day (the spells) for breaking an oath’; (the spells) for ‘keeping an enemy away from someone’, (or) on the 13th day (the spells) to get rid of the Lilu and Lilith demons, it will pay off” (STT 300: 7-8).

Hostility and its elimination.

AP (sign): GU₄.AN.NA “Bull of Heaven”; “death in the battle” (rev. 3).

Microcosm: GU₃ “throat” (col. 2)¹¹.

Month III = sign 3

ET: *sig*₄ *giš* *u*₃-*šub*-*ba* *gar* ‘placing the brick to the brick-mold’ = *Simānu* “deadline for some work”. Month of Kulla (deity of brick). The king makes bricks with the brick mold, the lands build their homes. We also know that this month was associated in late astronomical texts with the Gemini

⁶I understand *ša*₃-*bal*-*bal* ‘mixture of the heart’ as ‘cloud of reason’.

⁷*ra*₇*ibu* ‘head disease; anger, wrath’ (CAD R: 80-81).

⁸*nig*₂-*sag* ‘thing-head’ > *Nisannu* = *rēš šatti* “the head of the year” > Aries as *sag* ‘head’.

⁹*ayaru* II ‘young man’ (*āru* II ‘warrior’ < *u*₇ ‘to go against, to conflict’) (CAD A 1: 230).

¹⁰I understand *nam-erim*₂-*buru*₂-*da* ‘unleashing of hostility’ (cf. *uš*₁₁-*bur*₂-*ru*-*da* ‘unleashing of magic spell’).

¹¹*gu*₄ ‘bull, ox’ as the symbol of conflict mixed with *gu*₃ ‘throat’ as the organ of conflict in human’s body.

Lugalgirra and Meslamtaea who were Sin and Nergal (the light of the Moon and the darkness of the Nether World). One can propose some kind of relation between the myth of this month and the plot of ‘Enlil and Ninlil’: two deities in prison of the Nether World became parents of moon and darkness (KAV 218 I: 26-37; VR 46 I: 4; Emelianov 1999: 72-74; Horowitz 2014: 44, 61-64).

MP (month): “If in the month Simānu on the 10th day at the usual time, you perform (the spells) for ‘having a man love a woman’, on the 21st day (the spells) for ‘having a woman love a man’; on the 4th day (the spells) for ‘acquittal through the river ordeal’; on the 30th day (the spells) for ‘hate magic’; or on the 30th day (the spells) for ‘having a man love a woman’, it will pay off” (STT: 9-10).

The love of man and woman and their hatred for each other.

AP (sign): MAŠ.TAB.BA “Twins”; “death in prison” (rev. 4).

Microcosm: A.MAŠ.SIL₃ “(two) shoulders” (col. 3)¹².

Month IV = sign 4

ET: šu-numun ‘sowing’ = *Du’ūzu* “Tammuz”. Month of Dumuzi/Tammuz. The month of heaping up seed, taking out early seed, the wailing of Ninrurugu, the month when the shepherd Dumuzi was captured (KAV 218 I: 38-50; Emelianov 1999: 79-81; Horowitz 2014: 45, 64-68). Here the process of heaping up early barley seed is connected with the departure of Dumuzi to the Nether World. Women cry over him to stimulate the growth of seeds. We would suppose that the crying Nin-ru-ru-gu₂ of Astrolabe B < Nin-lu₂-ru-gu₂ ‘Mistress who opposes a man’, may be Ereshkigal, who is mistress of the Nether World, or his wife Inanna who was the reason of Dumuzi’s temporal death there.

MP (month): “If in the month Du’uzu on the 10th day at the usual time, you perform (the spells) for ‘a man to love a man’, on the 21st day (the spells) for ‘having a woman come’, on the 12th day (the spells) for getting rid of the Lilû and Lilith demons, (or) on the 21st day at the usual time (you perform) the counter-spells for ‘making a man love a woman’, it will pay off” (STT 300: 12-13).

The love of man to man, women’s faithfulness and love spell to the woman¹³.

AP (sign): AL.LUL “Crab”; “death from enemy (*a-ab-bu*)” (rev. 4) or “from sea (*a-ab-ba*)” (Sachs 1952: 66).

Microcosm: GABA ‘breast’ (col. 4)¹⁴.

¹²maš ‘twin’ > a-maš-sil₃ ‘remote twins’ (shoulders). This is idea of two twins who live far from each other.

¹³See also in ‘The Prostration Hemerology’: ‘[On the ... th day] he should not [drink] milk. He should put [... to Sin and] Šamaš. He should give (good news) to a female ill-wisher of his. Then mercy will be conceded to him. [On the ... th day,] he should release a capt[ive bird] to Šamaš. Then the mouth that cursed him will bless him’ (Jiménez & Adali 2015: 163, lines 14’-15’).

¹⁴Double meaning of gaba: gaba as woman’s breast and breast of opponent who defended himself (as in Sumerian gaba-gal₂).

Month V = sign 5

ET: NE.NE gar ‘establishing of torches’ = *Abu* ‘hole in the ground, memorial place’. Month of Gilgamesh. Braziers are lit, torches are raised to Anunnaki, the fire-god Girra comes down from Heaven and rivals the Sun god, on the 9th day young men at their city-gates fight one another wrestling and trying their strength in athletics (KAV 218 II: 1-14; Emelianov 1999: 84-88; Horowitz 2014: 45, 68-72). The fire of many torches helps mankind to drive away *eṭemmu*-ghosts of the Nether World. People at that time make sacrifices to their dead relatives who had not received food and drink from their children and came out from the Nether World to disbalance relations between the living and the dead. In literature, it is the time of Gilgamesh’s march to kur-lu₂-ti-la of Huwawa (in Sumerian, *kur* means simultaneously ‘a mountain’, ‘a foreign country’ and ‘the Nether World’). Athletic game played at that time in memory of Gilgamesh with the light of many torches seems to have been similar to the Greek Olympic Games.

MP (month): “If in the month of Abu on the 10th day at the usual time, you perform (the spells) for ‘cutting off the breath’ (spells), on the 10th day at the usual time (the spells) for bringing about a volte-face¹⁵, on the 28th day (the spells) for stroke, *bennu*, seizure, ‘hand of the god’-disease, (or) ‘hand-of-the-ghost’-disease, it will pay off” (STT 300: 14-15); “If in the months of Du’uzu and Abu, you perform (the spells) for frightening a (female) rival and for removing a man from his office, it will pay off” (STT 300: 19).

Healing of cardiovascular and blood vessels’ disease and the expulsion of the *eṭemmu*-ghosts together with female rival.

AP (sign): UR.MAH ‘Leo’; “he will live to an old age and defeat his enemies” (rev. 5).

Microcosm: ŠA₃ ‘heart’ (col. 5).

Month VI = sign 6

ET: kin-^dInnin ‘the service for Inanna’ = *Elūlu* “cleansing”. Month of Inanna/Ishtar. The goddesses are purified by/in the Divine River of the Ordeal. Yearly, it cleanses/they are cleansed. People come to the Great River opposed to them and sing for Inanna ururu-songs (KAV 218 II: 16-21; OECT XI 69+70 II: 24’; Emelianov 1999: 92-93; Horowitz 2014: 45, 72-76). Inanna’s statues are cleaned in ‘the River of the Sacred Ordeal’ because of her coming out from the Nether World at that time. In the literature, we know the myth ‘Gilgamesh and the Bull of Heaven’ where Gilgamesh has refused to enter Inanna’s temple in Uruk. He names her Nin-e₂-gal ‘Mistress of the Big House (= Akk. *bīt kīli* ‘prison’). It means that she was a prisoner of the Nether World and, after coming out, she is waiting for a new Dumuzi, that is, for a hero who must descend to the Nether World as a substitute for Inanna.

¹⁵ Here I understand *igi-nigin-na* as ‘dizziness’.

MP (month): “If in the month Ulūlu on the first day at the usual time, you perform (the spells) for ‘acquittal through the river ordeal’, on the 21st day at the usual time (the spells) for ‘entering the palace’ (*egalkurrû*), on the 24th day (the spells) for ‘seizing a ghost in order to tie a figurine to a man’; (the spells) for not entrusting the figurine of a man to the dead, (the spells) for giving water to a ghost to remove harm, it will pay off” (STT 300: 16-18). Ablution in the waters of the sacred river, watering *eṭemmu*’s and the expulsion, removal of sin.

AP (sign): AB.SIN₂ ‘Furrow’ (Nisaba as a symbol of it); “death after some upset (*niziqtu*)” (rev. 6).

Microcosm: GU₄.MURUB₄ ‘stomach’ (col. 6).

Month VII = sign 7

ET: du₆-ku₃ ‘the Sacred Mound’ (= place of determining destinies) = *Tašrītu* ‘beginning’. Month of Shamash and Grandfather of Enlil. The divine emblems/the shrines are sanctified, people and prince are cleansed, the holy annual offering of the lands is offered to the Anunnaki, the Gate of the Apsu is opened, the memorial offering of Lugaldukuga, Enki and Ninki are brought. Shamash and deity of Saturn are two judges of the Land. The first week of the month is the time of fasting before the recording fates on the clay tablet, which is the Tablet of Destinies (KAV 218 II: 22-37; CT 41 39: rev. 7; Emelianov 1999: 100-104; Casaburi 2000; Horowitz 2014: 45, 77-82). Purification of kings and rulers, libations to Enki-Ninki as parents of Enlil. It is the time of the Great Judgement of Shamash and Saturn over living people and composing of the Tablet of Destinies by Enki and Nisaba. MP (month): “If in the month *Tašrītu* on the 10th day at the usual time, you perform (the spells) for ‘appeasing anger’ (spells); on the 11th day (the spells) for ‘making a woman come’; from the 16th day to the 20th day (the spells) for ‘cutting off of the breath’; (the spells) ‘for a woman to come’; on the 16th and 17th day (you perform the spells) for ‘inviting a god to a banquet, goddess ditto’; (the spells) for (needing) to cure paralysis; (the spells) for purifying a house; (the spells) for quarantining a man; (the spells) for (needing) to heal a sick rectum; (the spells) for (needing to) cure a calculus; (the spells) for (needing to) stop diarrhea; (the spells) for (needing to) get rid of fever; on the 7th day (you perform the spells) for quarantining aman, it will pay off; on the 21st day (you perform the spells) for ‘the king to mention his name with good intentions’, it will pay off” (STT 300: 20-23).

Appeasing anger and kind words for superior, cleaning the house, incubation of patients, the treatment of the rectum, stones (gall bladder and kidneys), diarrhea and fever.

AP (sign): *Zi-ba-ni-tum*, ERIN₂ ‘Scales, Libra’, ‘the star of truth and justice’; ‘right he is or wrong, Shamash will be angry to him’ (LBAT 1593 II: 6; Reiner 2000: 423).

Microcosm: MUR ‘lungs, inner parts of body’ (col. 7).

Month VIII = sign 8

ET: apin-dug-a ‘release of the Plow’ = *Arahsamna* ‘the 8th month’. Month of Ishkur/Adad. The hoe and the plow hold a disputation in the steppe, the akitu-festival of seeding is set up (KAV 218 II: 39-46; Emelianov 1999: 108-111; Horowitz 2014: 45, 82-85). The ritual is unknown (it should be the festival of Tummal for Ninlil of Nippur). Astrolabe B alludes to this ritual when it mentions the ‘Dialogue between the Plough and the Hoe’. It means the time of finishing all work with the plough (the plough’s activity on the field lasting from the II till the VIII months).

MP (month): “If in the month of Arahsamnu the 10th day at the usual time, you perform (the spells) for a prince to mention his name in the palace with good intentions, on the 21st day at the usual time (the spells) for ‘one who sees you to rejoice at seeing you’, on the 12th day (the spells) for quarantining the patient (and) for getting rid of the Lilû and Lilith demons, on the 18th day (the spells) for a mogul or prince not to believe slander, (or) on the 28th day (the spells) ‘not to experience insults’, it will pay off. [If in the] month of Arahsamnu on the 28th day, you perform (the spells) for a man rising before (another) man; (the spells) for ‘appeasing anger’; (the spells) for ‘believing slander’; (the spells) for the dead to leave, or (the spells) for having intercourse with a sorcerer, witch or priestess; (the spells) for removing a mogul from the palace, ditto; (the spells) for divine anger; (the spells) for afflicting a man’s head; (the spells) for keeping a man away from a man who loves him and to keep a woman away from a woman who loves her, it will pay off. If in the month Arahsamnu, you perform (the spells) for returning a man through his substitute (image), (the spells) for ‘overturning a judgement’; (the spells) for aphasia; (the spells) for breaking a spell; (the spells) for bringing about a volte-face, it will pay off.” (STT 300: 25-31).

The possibility of aphasia, sorrow, intercourse with a witch, falling in love with a person of the same gender, slander, disgrace of nobles, mistrust and search for sincerity.

AP (sign): GIR₂.TAB ‘Scorpio’ = Tiamat, Išhara; Scorpio also called ‘the Bull of the Nether World’ (Emelianov 2010). KI MUL₂.GIR₂.TAB x MAH *kaš-ša-pat² ḫa-da-a-tu₂ na-ad-di-da-at aš-di-ḫa-at al-ma-na-at u UŠ₂^{ut} [GIR₂.TAB] UŠ₂ ša₂²-a-ḫu* ‘witch, funny, unleashes charm, seeking benefit, widow, and she died from a scorpion, in the basin’¹⁶ (LBAT 1593 II: 7¹-8¹); “death after some upset (*niziqtu*)” (rev. 7).

Microcosm: PEŠ₄ ‘uterus’ (col. 8)

Month IX = sign 9

ET: gan-gan-e₃ ‘rising of the Killer’ = *Kislīmu* (meaning unknown). Month of Nergal. Abundance and plenty are heaped up, the mighty hero Nergal

¹⁶*naddidat* may be from *nadādu*. Meaning of this verb is unknown, but II1 “to comb, to clean” [CAD N1: 41]. Perhaps, this epithet connected to witchcraft. *ašdihat* I understand as a variant of *išdihu* “benefit” [CAD I/J: 234].

comes up from the Nether World, the divine weapon/crushing defeat of the Twin-gods (KAV 218 III: 1-10; Emelianov 1999: 112-117; Horowitz 2014: 46, 85-88). Here GAN.GAN = *šagāšu* ‘to kill’ (CAD A: 66), *e₃* ‘to rise’. We know from Astrolabe B and the corresponding texts it is the month of Nergal. In the Erra-Epic Nergal is called *bēl šagāše* ‘master of murder’, so we can say that the whole month is dedicated to Nergal’s rising from the Nether World, that is, to the darkness of the winter sun. There is an association between Nergal’s rising and the rising of fruits from the Earth. This is the reason why the IX month is ‘the month of prosperity and abundance’.

MP (month): “If in the month Kislimu on the 10th day at the usual time, you perform (the spells) for seducing a woman, on the 21st day at the usual time (the spells) for ‘whoever looks at you to point his finger with good intentions’; (the spells) for ‘for pointing the finger with good intentions [for] your benefit’, (or) on the 12th day (the spells) for aphasia, it will pay off. If the ... day (of the month) you perform (the spells) for ‘making known and making him grasp his promise’, it will pay off. If you perform the taboo (spells), it will pay off. If in the month of Kislimu, the [...] day being for (spells) to get rid of Lilû and Lilith demons (and spells for) aphasia -- if you perform them, it will pay off” (STT 300: 32-35).

The possibility of aphasia, good attitude of people to achieve personal gain, fulfillment of someone’s promises.

AP (sign): PA.BIL.SAG ‘Sagittarius’; *a-lid sa-le-e* GIŠ.BAN *ra-ka-ab* ANŠE.KUR.RA *ša₂-le-e* ID₂ *pu-uḫ-ḫu-ru* *ša₂* NIG₂.ŠID ‘archer, horseman, a swimmer, a bookkeeper’ (LBAT 1593 II: 8’-9’); ‘his days are good, death in Abzu’ (rev. 8); Jupiter in Pabilsag = his days will be long (horoscope for Aristokrates, 234 BC) (Rochberg 1998: 79).

Microcosm: TUGUL ‘thigh’ (col. 9)

Month X = sign 10

ET: ab-ba-*e₃* (from Ur III) ‘rising of the Elder(s)’ or ‘Rising of the Sea’ = *Ṭebētu* ‘flooding’. Month of Ishum, gatekeeper of the Nether World. The Great Festival of Anu, the month of the splendor of Inanna, the elders of the City go out to the Assembly, Ishum [...] their gates, Shamash establishes the freedom and repose of the Nether World. The 21th day is the day when Dumuzi comes from the Nether World (?) (KAV 218 III: 12-24; Emelianov 1999: 123-127; Horowitz 2014: 46, 89-91). Here the main rituals are:

a) a big feast of An related to the eldest deities (Enmesharra, Ninshubur);

b) rising of the dead founders of the state (Ur-Nammu, Shulgi) and their seating at the place of assembly.

MP (month): “If in the month [Ṭebet, on the 10th day] at the usual time you perform (the spells) for depositing gold and silver; on the 11th day (the spells) for annulling the ‘divine anger of the watchful god’; on the 11th day at the usual time (the spells against) a ‘man’s slave not running away’; (the spells for insuring that) the intentions of male or female slaves not change’; (the spells) for annulling the ‘divine anger of the watchful god’ or on the 12th

day (the spells) for ‘cutting off the breath’ and to get rid of Lilû and Lilith demons, it will pay off. (If) in the month Țebetu, you perform the (spells) for ‘cutting off the breath’, it will pay off” (STT 300: 36-38). Wealth, cardiovascular disease, appeasement of anger, “the slave escape.”

AP (sign): SUHUR.MAŠ₂ ‘Barbus-Kid’; ‘Bennu-disease and headache kidnapped him; poor man, a vagabond, the old man’s death/death from sea (A.AB.BA)’ (LBAT 1593 II: 9’-10’).

Microcosm: *kim-ša* ‘knees, shins’ (col. 10).

Month XI = sign 11

ET: ud₂-duru₅ ‘emmer’/‘darkness’ = *Šabātu* ‘sweeping away’. Month of Enlil and Adad. The plants together in the steppe come forth, the month of joy of Enlil, the month of cold, the favorite month of Enlil, month of fury of [...] (KAV 218 III: 25-34; Emelianov 1999: 129-133; Horowitz 2014: 91-95). The ritual is unknown; in Iq.-ip. 105, 11 ‘the month of Ishkur, canal inspector of the Heaven and the Earth’ (Labat 1965: 96). We know about a very obscure holiday of Enlil at that time (Ur III text in Sallaberger 1993: 149), where many weepers participate. Assur state ritual (van Driel 1969: 140) contains the liturgical reading of a-ab-ba hu-luh-ha at the end of this month. In the latter text, the people of Nippur appeal to Enlil with a request not to flood their city and not to freeze them. One can suggest that rituals of this month may be related to the image of the Flood and the World Crush.

MP (month): “If in the month *Šabātu* on the 10th day at the usual time, ditto (= you perform the spells) against a woman gazing [at] a man, on the 21st day at the usual time (the spells) for ‘hate magic’, ‘overturning a judgement’, ditto (= it will pay off)” (STT 300: 39); “If in the months of Țebetu and *Šabātu* on the 21st day, [ditto = you perform (the spells)] for ‘a man’s slave not to run away’ (and) ‘that the intentions of slave and slavegirl not change’, it will pay off. (STT 300: 42); “[If] you perform potency spells [on] the first day of the month [*Šabātu*],

from the first day to the 30th day, it will pay off” (STT 300: 1).

The reluctance of women to look at the man, hatred, impotence, “change of thoughts of slave and slave girl who was going to escape”.

AP (sign): GU.LA ‘Great Man’ (= Enki’s anthropomorphic image), Aquarius; “MUL₂.GU.LA *a-lid šu bi a-ka-lu u UŠ₂^{ut} šim-tum* ‘who born in GU.LA, ??-disease will eat him and he will die according to destiny’ (= natural death); good name, he will have sons, death from water” (LBAT 1593 II: 10’); ‘good name, he will have sons, he will die from water’ (rev. 10).

Microcosm: UR₂ ‘legs’ (col. 11).

Month XII = sign 12

ET: še-gur₁₀-ku₅ ‘(time of) harvest’ = *Addaru* ‘to be dark, gloomy, to experience fear’. Month of Ea. The threshing floors of the steppe are filled in the vast fields, the sickle is not left behind, the month of joy of En-[...] (KAV 218: 35-45; Emelianov 1999: 135-138; Horowitz 2014: 95-100). The

ritual is unknown, however, we know from *Iqqur-ipuš*, that it was the time of destruction of Agade and Ur. 'Harvest' may mean 'the end' here. Gods of the month are Sibitti, who are friends of Asag, children of Enmesharra (Labat 1965, no. 105: 12).

MP (month): "If in the month of Addaru on the 26th day at the usual time, ditto (= you perform the spells) for 'breaking a spell; on the 28th day (the spells) for 'keeping the foot of evil out of a man's house'; on the 27th day at the usual time (the spells) to regularize a publican's trade, apart from (spells) for counteracting the continuing over-consumption of the profit of his tavern, ditto (= it will pay off)" (STT 300: 40-41); "[If in the month Addaru], you perform (the spells) from the first day to the 15th day (for) having 'forehead affliction' or (for) alleviating impotence, (or) from [the first day] to the 30th day for getting rid of Lilû-demon and seizure, it will pay off" (STT 300: 2).

Impotence, migraine, a tendency to alcoholism.

AP (sign): KU₆.MEŠ 'Fish', ZIB; *bu-ni-e mas-ku pu-luḥ-tu ŠA₃^{bi}* 'he will be man of unpleasant appearance, he will experience fear of heart'; good name, long days" (LBAT 1593 II: 11'); "good name, his days will be long" (rev. 11).

Microcosm: GIR₃.2 'feet' (col. 12).

Having examined explanatory texts and astrological prescriptions for months and signs, we can now draw some conclusions about the relationship of these two groups of cuneiform texts.

Months and signs of springtime are designated as conflicting, but at the same time connected with family, as well as with state affairs and collective deals. Summer prescriptions mark the time for sexual activity, both hetero- and homosexual; this time is fraught with disease and early death, as well as imprisonment, but at the same time makes a man mighty as a lion. Autumn texts mark the time characterized by damage to a person and the judgement for his actions. Only winter gives a person hope for a long life, well-being and healthy offspring. It should be noted that, according to the descriptions of the explanatory texts, the spring months are known as the time of the victory of the hero over the forces of chaos, and, in fact, it was impossible to conceive this season without the idea of confrontation and conflict. Myths of summer months describe the sacred journey of the gods and heroes to the Underworld. The autumn months are associated with purification and judgement. The most interesting thing is the nature of winter months. On the one hand, they are seen as disastrous. But, on the other hand, it is the struggle against the forces of chaos and destruction which gives people the will to live and the hope for immortality.

This distribution becomes clear in the tablet STT 300. *Nisannu*-Aries is the head, because it is the first month and because this is the time of confirmation of the status of the king who is the first person in the state. Taurus is associated with the throat because this period of the year provokes a person to conflict, and the best organ expressing conflict is precisely the throat as the location of a cry. Twins-shoulders are also understandable as a symbol, since the shoulders, like twins, are opposite each other, and on STT 300 the third month is symbolized by love of a man and a woman, i.e. when two become one. How Cancer is related to the chest

is not entirely clear, nor is it clear about the connection between the fourth month and homosexual love. But I think that GABA ‘breast’ may have the sense of ‘opponent’ (as in Sumerian *gaba-gal₂*), so then *gaba* is a female opponent of a man. The lion and heart are an association that is perfectly demonstrated on the STT 300 tablet by the fifth month’s connection with cardiovascular diseases. Virgo and Libra are identified with internal organs, which is well spelled out in the previous text. Scorpio’s connection with the female sexual organs is clarified from incantations to prevent sexual intercourse with a witch or a temple priestess. It is about unauthorized kinds of love. The remaining four months are associated with the lower parts of body by the residual principle.

The data of cuneiform texts have interesting parallels in the research of modern scientists. For example, studying temperament of students, born in different seasons, Xenia Gonda makes the following conclusion: “The group found the following statistically significant trends: cyclothymic temperament (characterized by rapid, frequent swings between sad and cheerful moods), is significantly higher in those born in the summer, in comparison with those born in the winter. Hyperthymic temperament – a tendency to be excessively positive – were significantly higher in those born in spring and summer. Those born in the winter were significantly less prone to irritable temperament than those born at other times of the year. Those born in autumn show a significantly lower tendency to depressive temperament than those born in winter.” (Rihmer et al 2011: 64-70; Gonda 2014: 1-3)

From the standpoint of modern psychophysiology, the meanings of calendar and zodiacal prescriptions and predictions can be satisfactorily explained. For the spring and summer months/signs predicted heart disease, various delusions and conflict situations; for the people of this time typical manifestations of temperament are hyperthymia and cyclothymia, that inevitably affect the autonomic nervous system, induce pressure oscillations and heart rate. For autumn months/signs depression is combined with an irritated state, which leads to diseases of the internal organs and also does not promote longevity and well-being. But for the winter months/signs depression is not accompanied by any cyclothymia or excessive irritability. Therefore, people of this time (as well as the people of this time, from the point of view of the Babylonian astrology) have a chance to live very long, although not quite a joyous life.

Thus, we can draw the following conclusions:

1. Scientists of Neo-Assyrian and Late Babylonian times converted the data in comments on calendar months and festivals into medical and astrological predictions and prescriptions. They projected the mythological content of monthly rituals onto possible diagnoses of human beings and onto traits of those who were born in the definite periods of the year.

2. By means of this intellectual procedure they tried to establish connections between collective behavior and personal situation in the same period of year: a connection between the macrocosm and the microcosm.

3. It is possible that their work contains a grain of truth which modern science is now approaching: that seasonal and monthly biorhythms are related to temperament of a person.

References

- Ambos, K. 2009. *Der König im Gefängnis und das Neujahrsfest im Herbst. Mechanismen der Legitimation des babylonischen Herrschers im 1. Jahrtausend v. Chr. und ihre Geschichte*. Heidelberg. Bd. II. Textbearbeitungen.
- Beckman, G. M. 1983. *Hittite Birth Rituals*. Wiesbaden: Otto Harrassowitz.
- [CAD] - *The Assyrian Dictionary of the Oriental Institute of the University of Chicago*. 26 vols. 1956–2011.
- Casaburi, M. C. 2000. The Alleged Mesopotamian “Lent”: The Hemerology for Teshritu. *Studi epigrafici e linguistici sul Vicino Oriente antico*, XVII: 13–29.
- Cavigneaux, A. & V. Donbaz. 2007. Le mythe du 7. VII: les jours fatidiques et le kippur mésopotamiens. *Orientalia* 4 (2007): 293–335.
- [CT] - *Cuneiform Texts from Babylonian Tablets in the British Museum*. London, 1896–
- Driel, G. van. 1969. *The Cult of Assur*. Assen: van Gorcum.
- Emelianov, V. V. 1999. *Nippurskiy kalendar i rannyya istoriya Zodiaka [The Nippur Calendar and the Early History of Zodiac]*. St. Petersburg: Peterburgskoe Vostokovedenie (In Russian).
- _____. 2010. Mifopoeticheskoe v nazvanii vos'mogo zodiakal'nogo sozvezdiya [Mythopoeic name of the VIIIth constellation of Zodiac]. *Toporovskie chteniya I-IV. Izbrannoe*. Moscow: Indrik: 58–78. (In Russian)
- _____. 2014a. ‘Kalendar i khronopsikholgiya (o semanticheskoy oppozitsii vesny i oseni v mesopotamskikh tekstakh)’ [Calendar and Chronopsychology (On the Semantic Opposition of Spring and Autumn in the Texts of Ancient Mesopotamia)], *Antropologicheskij forum*, 2014, No. 22: 143–163. (In Russian).
- _____. 2014b. ‘Elementy Demokrita i tablichka Nabushumlishira’ [Elements of Democritus and the Tablet of Nabushumlishur], *Voprosy filosofii*, 2014, 6: 53–63. (In Russian).
- _____. 2014c. “Olimpiada” Gilgamesha (istochniki i istoriya voprosa) [“Olympic Games” of Gilgamesh (Sources and History of the Problem)]. Buettner K.A., (ed.), *Iudaika i arameistika. Sbornik nauchnyh statey na osnove materialov Tretyei yezhegodnoy konferencii po iudaike i vostokovedeniu 17.12.2013 [Hebrew and Aramaic Studies. Selected Papers of the Third Annual Conference on Hebrew Studies and Oriental Studies 17.12.2013]*. St. Petersburg: St Petersburg Institute for Jewish Studies, 2014: 278–298. (In Russian).

- Ennis, E. & C. McConville. 2004. Stable Characteristics of Mood and Seasonality. *Personality and Individual Differences*, Vol. 36., No. 6: 1305–1315.
- Gavrilov, L. A. & N. S. Gavrilova. 2011. Season of Birth and Exceptional Longevity: Comparative Study of American Centenarians, Their Siblings, and Spouses. *Journal of Aging Research*: 1-11.
- Geller, M. J. 2014. *Melothesia in Babylonia. Medicine, Magic, and Astrology in the Ancient Near East*. Boston/Berlin., Walter de Gruyter (Science, Technology and Medicine in Ancient Cultures 2).
- Gonda, X. 2014. 'Birth Season Affects Your Mood in Later Life'. Media release on 19.10.2014:
<https://www.ecnp.eu/~media/Files/congress/Berlin%202014/Pratical/Press/Gonda%20press%20release%20FINAL.pdf?la=en>
- Horowitz, W. 2014. *The three stars each: The Astrolabes and related texts*. Wien: Institut für Orientalistik der Universität Wien.
- Jiménez, H. & S. Adali. 2015. The 'Prostration Hemerology' Revisited: An Everyman's Manual at the King's Court. *Zeitschrift für Assyriologie* 105 (2015): 154-191.
- [KAV] – Schroeder, O. 1920. *Keilschrifttexte aus Assur verschiedenen Inhalts*. Leipzig.
- Koch, U. S. 2015. *Mesopotamian Divination Texts: Conversing with the Gods. Sources from the First Millennium BCE*. Münster, Ugarit Verlag.
- Kurtik, G. E. 2007. *Zvezdnoe nebo drevney Mesopotamii: nazvaniya sozvezdnykh i drugikh svetil [Starry Sky of Ancient Mesopotamia: the Names of Constellations and Other Heavenly Bodies]*. St. Petersburg: Aleteia (In Russian).
- Labat, R. 1965. *Un calendrier babylonien des travaux: des signes et de mois*. Paris.
- [LBAT] - Pinches, T. G. & J. N. Strassmaier. 1955. *Late Babylonian Astronomical and Related Texts*. Brown University Press.
- Linssen, M. J. H. 2004. *The Cults of Uruk and Babylon. The Temple Ritual Texts as Evidence for Hellenistic Cult Practices*. Leiden-Boston, Brill-Styx.
- Livingstone, A. 1986. *Mystical and Mythological Explanatory Works of Assyrian and Babylonian Scholars*. Oxford.
- _____. 2000. On the Organized Release of Doves to Secure Compliance of Higher Authority. A. R. George and I. L. Finkel (eds.): *Wisdom, Gods, and Literature: Studies on Assyriology in Honor of W.G. Lambert*. Winona Lake, Indiana: Eisenbrauns: 375-387.
- _____. 2013. *Hemerologies of Assyrian and Babylonian Scholars*. Bethesda, CDL Press.
- Maul, S.M. 1994. *Zukunftsbewältigung. Eine Untersuchung altorientalischen Denkens anhand der babylonisch-assyrischen Löserituelle (Namburbi)*. Mainz am Rhein, von Zabern.
- [OECT XI] – Gurney, O.R. 1989. *Literary and Miscellaneous Texts in the Ashmolean Museum*. Oxford. (Oxford Editions of Cuneiform Texts XI)

- Reiner, E. 2000. Early Zodiologia and Related Matters. *Wisdom, Gods and Literature. Studies in Assyriology in Honor of W.G.Lambert*. Winona Lake, Indiana: Eisenbrauns: 421-427.
- Rihmer, Z., Erdos, P., Ormos, M., Fountoulakis, K. N., Vasquez, G., Pompili, M., Gonda, X. 2011. Association between Affective Temperaments and Season of Birth in a General Student Population. *Journal of Affective Disorders*, 2011, vol. 132: 64–70.
- Rochberg, F. 1998. *Babylonian Horoscopes*. Philadelphia, 1998.
- _____. 2010. In the Path of the Moon: Babylonian Celestial Divination and its Legacy. Leiden: Brill, XXII.
- Roeckelein, J. E. 2008. History of Conceptions and Accounts of Time and Early Time Perception Research. Grondin, S. (ed.) *Psychology of Time*. Bingley, Howard House, Wagon Line: 1-50.
- Sachs, A. J. 1952. Babylonian Horoscopes. *Journal of Cuneiform Studies*, Vol. 6: 49–75.
- Sallaberger, W. 1993. *Der kultische Kalender der Ur III Zeit*. Bd. I–II. Berlin and New York.
- [SpTU II]** – Weiher, E. von. 1983. Spätbabylonische Texte aus Uruk. Bd. II – Berlin., Mann,
- [STC]** – King, L. W. 1902. *The Seven Tablets of Creation*. Vol. I–II. London.
- Stern, S. 2012. *Calendars in Antiquity: Empires, States, and Societies*. Oxford, Oxford University Press.
- Stol, M. 2000. Birth in Babylonia and the Bible: Its Mediterranean Setting. Groningen, STYX publications.
- [STT]** – Finkelstein, J.J. and O.R. Gurney. 1957. *The Sultantepe Tablets*. London: The British Institute of Archaeology in Ankara (vol. I-II).
- Wee, J. 2015. Discovery of the Zodiac Man in Cuneiform // *Journal of Cuneiform Studies* 67 (2015). P. 217-233.
- Weil, Z. M. & R. J. Nelson. 2012. Seasonal Rhythms in Psychoneuroimmunology. *The Oxford Handbook of Psychoneuroimmunology*. Oxford University Press: 291-305.
- Zulley, J. 2009. Human Chronobiology. In Search of Biological Time. In: Baudson, T. G., Seemüller, A., Dresler, M. (eds.). *Chronobiology and Chronopsychology*. Lengerich: Pabst: 6-13.