THE PLANETS, THE JEWS AND THE BEGINNINGS OF "JEWISH ASTROLOGY"

Reimund Leicht

When did the Jews find out that there are planets in the heaven, and since when did they observe their course? This, we will probably never know. But if we ask when Jewish sources start to speak about planets, we are confronted with a surprise: For a very long period, we find virtually nothing about planets in Jewish culture. Neither the Hebrew Bible nor the post-biblical Jewish literature of the Second Temple period provide us with any substantial knowledge about those "wandering stars," and even Qumran—which has otherwise preserved a small but highly significant collection of texts dealing with astrology, astronomy and calendar issues—is largely silent about planets.

This exclusion of the planets from Jewish culture is quite striking. One could ask oneself whether this is a tendentious condemnation of a knowledge that was deemed dangerous or at least incompatible with Jewish religion, but this will not be the focus of the present paper. Here, we will follow a different line: In contrast to biblical times and Second Temple Judaism, some basic knowledge about planets and their role in astrology becomes ubiquitous in traditional Jewish learning in Late Antiquity and in the Middle Ages. After the long period of total silence, planets were suddenly rising on the horizon of Jewish texts, and more than that, they fulfilled an important role in certain astrological practices.

This is quite a surprising phenomenon: How could it come about that a number of basic tenets of planetary astronomy and astrology eventually did find their way into the core Jewish traditions after any reminiscence was banned during centuries? How did the silenced outcasts of Jewish culture in Antiquity assume a place of honor, and how was the tendentious exclusion transformed into a most honorable inclusion?

The absence of planets in ancient Jewish sources

With the exception of Saturn, which is mentioned with its Akkadian name *Kewan* (*Kiyyun*) in Amos 5:26, and the doubtful translation of *ʿAsh* as *Hesperos* (Venus as the evening star) in the Septuagint version of Job 38:32, there are no unambiguous references to the planets, i.e. the five "real" planets Saturn, Jupiter, Mars, Venus and Mercury in the Hebrew Bible.[1] This absence of any detailed knowledge about the planets is perhaps not totally surprising in view of the general scarcity of astronomical and astrological knowledge in the Hebrew Bible in general.[2] It remains nevertheless remarkable, since astronomy, astrology and the belief in astral deities played an enormous role in Assyrian and Babylonian culture. Accordingly, it seems quite possible that some kind of astral piety and religious practice did have some impact on ancient Israel, and was thus refuted by some of the prophets.[3] But be this as it may, there is no positive evidence that forces us to assume that any aspect of planetary astronomy or astrology was known in greater detail in biblical times.[4]

The same observation holds true for most of the Second Temple period. This is perhaps slightly more surprising given the fact that during the Hellenistic period astrology underwent one of its peaks, and one might expect that it would have been rather easy for Jews to create literary contexts, where the planets could have found a decent place in Jewish literature. Consider, for example, the astronomical teachings of chapters 72–82 of 1 Enoch, where the planets, which are next to the sun and the moon the most striking astronomical entities visible in the sky, are conspicuously absent. Attempts have been made to fill this gap by interpreting the "seven stars," which "transgressed God's

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[1] On star names in the Hebrew Bible cf. Sigmund Mowinckel, "Die Sternennamen in Alten Testament," in *Norsk Teologisk Tijdskrift* 29 (1928); Robert C. Newman, "כוכב (kôḵāḇ)," Willem A. VanGemeren (ed.), *New International Dictionary of Old Testament and Exegesis*, vol. 2, pp. 609–614; cf. also R. E. Clements, "כוכב (kôḵāḇ)," G. Johannes Botterweck et al. (eds.), *Theologisches Wörterbuch zum Alten Testament*, vol. 4, col. 79–91.

[2] Cf., e.g., the classical study by Giovanni Schiaparelli, *L'astronomia nell'Antico Testamento* (Milan, 1903).

[3] Cf. Rainer Albertz, *Religionsgeschichte Israels in alttestamentlicher Zeit* (Göttingen, 1992), pp. 295–297.

[4] Cf., for a more recent discussion, Ida Zatelli, "Astrology and the Worship of the Stars in the Bible," *Zeitschrift für die Alttestamentliche Wissenschaft* 103 (1991): 86–99.

commandments," mentioned in 1 Enoch 18:13ff. and 21:2–6, as referring to the irregular course of the planets.[5] This, however, remains highly hypothetical, so that it might seem to be an appealing solution to interpret the absence of the planets as the result of intentional censorship. The religious and astrological orientation of human beings toward the planets may have been seen as a "*lapis offensionis*,"[6] but at any rate, the planets are virtually inexistent in 1 Enoch.

Whereas a re-insertion of the planets into the cosmology of 1 Enoch by means of sophisticated interpretations might be possible, it is even more difficult to detect a closer familiarity with planetary astronomy or astrology in other literary sources of the period. Attempts to "prove" the influence of astrological speculations, most notably that of the theory of the Great Conjunction of Saturn and Jupiter, on the political events during the Hasmonean and Herodian eras, are pure guesswork, and scholars advocating such an interpretation presuppose a general familiarity with this astrological concept as a *petitio principii* rather than being able to deduce it from their literary sources.[7] Similarly, the re-discovery of the planets and their angels in various texts belonging to the Qumran community is possible only at the cost of enormous interpretative detours.[8] The same corpus of texts, which has preserved some unambiguous sources for astrological practices[9] and an almost complete list of the Aramaic names of the signs of the zodiac in the *brontologion* 4Q318,[10] remains silent as soon as it comes to speak about planets.

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[5] Cf. the passages speaking about irregular movements of stars in 1 Enoch 75:2; 80:6.7; 82:2; for a discussion cf. Matthias Albani, *Astronomie und Schöpfungsglaube. Untersuchungen zum astronomischen Henochbuch* (Neukirchen/Vluyn, 1994), pp. 115–116.

[6] Albani, *ibid*., pp. 249–255, 335–344.

[7] Cf. Kocku von Stuckrad, *Das Ringen um die Astrologie. Jüdische und christliche Beiträge zum antiken Zeitverständnis* (Berlin/New York, 2000), pp. 102–158.

[8] Stuckrad, *ibid*., pp. 159–222, especially pp. 173–176.

[9] Cf. Stuckrad, *ibid*., and Reimund Leicht, *Astrologumena Judaica. Untersuchungen zur Geschichte der astrologischen Literatur der Juden* (Tübingen, 2006), pp. 17–27.

[10] This text has been the subject of vivid scholarly dispute in recent years. Cf. J. C. Greenfield and M. Sokoloff, "An Astrological Text from Qumran (4Q316) and Reflections on Some Zodiacal Signs," *Revue de Qumran* 16 (1993–95): pp. 507–525, and for further literature and discussions Stuckrad, *ibid*., pp. 204–215, and Leicht, *ibid*., pp. 19–24.

This general impression is only partially mitigated by the fact that both Josephus Flavius[11] and Philo of Alexandria[12] describe the Menorah according to an astral symbolism and associate its seven arms with the seven planets. Both authors are oriented toward a Greek-speaking audience to such an extent that we cannot deduce from these texts that their interpretation necessarily reflects beliefs current among Jews in the first century CE.

Furthermore, we have to assume that the Jewish astrologers who composed Greek astrological texts attributed to Abraham (probably in Hellenistic Egypt) knew about the planets,[13] but even from the fragments preserved here we cannot seize a single piece of clear evidence dealing with planets. Finally, the observance of extraordinary celestial phenomena connected with Jesus' birth (Matthew 2:1–12) are too vague to prove the opposite.

To sum up, from the whole period preceding the destruction of the Second Temple, we possess not a single piece of evidence from Jewish culture testifying to a more intimate knowledge of planetary astronomy or astrology. As a consequence, close to nothing is known about the "status" of the planets in Jewish culture. We cannot even tell their Hebrew or Aramaic names. It probably would be a rash conclusion to argue that this is to be interpreted as the outcome of intentional censorship. It is equally possible that the lack of interest was due to the fact that there was no urgent need to deal with planets at all. Nothing forces men to think about planets as long as their daily life is regulated; even if more sophisticated problems arise, such as the question of the fixing of the correct calendar, this does not necessarily imply an interest in planets at all. This situation, however, would change in later centuries.

The first steps toward an inclusion: Planets in the Talmud

Many aspects of the development of the present Jewish calendar prior to its implementation traditionally associated with Hillel II in 358/59 CE remain obscure. Rabbinic literature has preserved only highly frag-

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[11] Josephus, *Jewish War*, V,216–218, and *Jewish Antiquities* III,182.

[12] Philo, *Moses*, II,105; *Questions and Answers on Exodus*, II,73–79; *Who is the Heir*, 216–229.

[13] Cf. Leicht, *ibid.*, pp. 11–17.

mented information about it, and many attempts to reconstruct this dark period remain mere guesswork.[14] However, our sources make it quite clear that toward the end of the tannaitic period (end 2nd century CE) and in the early amoraic period (first half of the 3rd century) the rabbis intensified their efforts to find solutions for a number of intricate problems of a fixed luni-solar calendar.

Accordingly, in this very period we encounter some unambiguous expressions of the high esteem in which the study of the calendar and astronomy was held among the rabbis. An example in case is Bar Qappara, a tanna of the fifth generation, who is reported to have said that "everyone who knows to calculate the *tequfot* and *mazzalot* and does not calculate (them)—Scripture says about him (Is 5:12): *And they do not look at the work of the Lord and the doing of his hands they did not see*" (bShab 75a).[15] Variant versions of the same dictum circulated for Rav, a Babylonian amora of the first generation ("Who knows to calculate the *tequfot* and *mazzalot* and does not calculate [them]—one does not talk to him"),[16] and for R. Yohanan, a Palestinian amora of the second generation ("From where do we know that it is a commandment for man to calculate the *tequfot* and *mazzalot*? Because it is said [Deut 4:6]: *And you shall preserve and do it, because it is your wisdom and your understanding in front of the nations.*—this means: the calculation of *tequfot* and *mazzalot*.")[17]

Since this is not the place to discuss the whole problem of the Jewish calendar, a few details relevant for these quoted dicta suffice. The calculation of the *tequfot* mentioned by Bar Qappara, Rav and Yohanan clearly refers to the attempts made at that time to fix the length of the tropical solar year and, concomitantly, to make a precise calculation of the length of the four seasons defined by the equinoxes and

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[14] Cf. on the development of the Jewish calendar Adolf Schwarz, *Der jüdische Kalender historisch und astronomisch untersucht* (Breslau, 1872); Ludwig Basnitzki, *Der jüdische Kalender. Entstehung und Aufbau* (Frankfurt am Main,[2] 1998;[1] 1938); Sacha Stern, *Calendar and Community. A History of the Jewish Calendar Second Century BCE–Tenth Century CE* (Oxford, 2001).

[15] bShab 75a: אמר רבי שמעון בן פזי אמר רבי יהושע בן לוי משום בר קפרא: כל היודע לחשב בתקופות ומזלות ואינו חושב—עליו הכתוב אומר *ואת פעל ה' לא יביטו ומעשה ידיו לא ראו*.

[16] bShab 75a: אמר רב זוטרא בר טוביה אמר רב: [...] והיודע לחשב תקופות ומז' לות ואינו חושב—אסור לספר הימנו.

[17] bShab 75a: אמר רבי שמואל בר נחמני אמר רבי יוחנן: מנין שמצוה על האדם לחשב תקופות ומזלות—שנאמר *ושמרתם ועשיתם כי היא חכמתכם ובינתכם לעיני העמים*—הוי אומר זה חישוב תקופות ומזלות.

solstices. For our purpose it is of little relevance that Jewish tradition has adopted two different lengths of the solar year: Mar Shemuel, a Babylonian amora of the first generation, fixed the length of a *tequfah* to 91 days and 7 1/2 hours, based on a solar year consisting of 365 days and 6 hours, which is identical with the Julian calendar, whereas one generation later, the Babylonian amora Adda is reported to have calculated the *tequfah* at 91 days, 7 hours, 519 *halaqim* and 31 *regaʿim*, summing up to a solar year of 365 days, 5 hours, 997 *halaqim* and 48 *regaʿim*.[18] What is more important for us is that given the fact that the very first *tequfah* of Nisan was believed to have fallen on Wednesday 0 hours (i.e. 6 p.m.), all the following *tequfot* of Nisan, Tammuz, Tishre and Tevet happen to fall on different hours of the day according to a fixed pattern. This pattern is expounded in another passage of the Babylonian Talmud (bEr 56a):

> Shemuel said: The *tequfah* of Nisan falls in the four quarters of the day only: either in the beginning of the day, or the beginning of the night or the middle of the day or the middle of the night. The *tequfah* of Tammuz falls either in the first or the seventh and a half only, be it during the day or the night. The *tequfah* of Tishre falls in three hours or nine hours only, be it during the day or the night. The *tequfah* of Tevet falls in the fourth and the tenth and a half only, be it during the day or during the night. And between one *tequfah* and the other there are 91 days and seven and a half hours only, and one *tequfah* never attracts more than half an hour of the other one.[19]

Mar Shemuel's year thus counts 365 days and 6 hours, and the *tequfah* of Nisan progresses 1 day and 6 hours every year (i.e., first year: 0 hours [6 p.m.] of Tuesday; second year: 6 hours [0:00 a.m.] of Thursday; third year: 12 hours [6 a.m.] of Thursday etc.) to the effect that the *tequfah* reverts to the original weekday every 28 years.

In principle it would have been possible to count weekdays and hours simply by numerals as was done in the texts quoted above and is still customary today (*yom rishon, shaʿah shesh* etc.), but there is evidence that the rabbis adopted a system of *planetary rulers* for both

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[18] One hour contains 1080 *halaqim*, one *heleq* 76 *regaʿim*.

[19] bEr 56a: אמר שמואל: אין תקופת ניסן נופלת אלא בארבעה רבעי היום או בתחלת הלילה או בחצי היום או בחצי הלילה. ואין תקופת תמוז נופלת אלא או באחת ומחצה או בשבע ומחצה בין ביום ובין בלילה. ואין תקופת תשרי נופלת אלא או בשלש שעות או בתשע שעות בין ביום ובין בלילה. אין תקופת טבת נופלת אלא או בארבע ומחצה או בעשר ומחצה בין ביום ובין בלילה. ואין בין תקופה לתקופה אלא תשעים ואחד יום ושבע שעות ומחצה ואין תקופה מושכת מחברתה אלא חצי שעה.

Table 1

Tequfat Nisan	0 hours (6 p.m.)	6 hours (midnight)	12 hours (6 a.m.)	18 hours (noon)
Tequfat Tammuz	7,5 hours (1:30 a.m.)	13,5 hours (7:30 a.m.)	19,5 hours (1:30 p.m.)	1,5 hours (7:30 p.m.)
Tequfat Tishre	15 hours (9 a.m.)	21 hours (3 p.m.)	3 hours (9 p.m.)	9 hours (3 a.m.)
Tequfat Tevet	22,5 hours (4:30 p.m.)	4,5 hours (10:30 p.m.)	10,5 hours (4:30 a.m.)	16,5 hours (10:30 a.m.)

the days of the week and for the hours of each day (Sun-day, Mon-day etc.) at a relatively early stage.

The origins of this "planetary week" are still unknown, but as Franz Boll pointed out, "it is beyond any doubt that the lunar week [of seven days—R. L.] existed long before the idea occurred to dedicate each day of the week to one planet."[20] The earliest direct evidence for the association of the seven planets Saturn—Sun—Moon—Mars—Mercury—Jupiter—Venus with the seven days of the week is relatively late. It cannot be dated earlier than the first century BCE. Various technical explanations were given for the basic ideas underlying this system, but it seems quite likely that the one provided by Vettius Valens, an astrologer of the second century CE, is historically seen as the correct one. In chapter I:10 of his *Anthologiae* he reports that planetary rulers were first allotted to each hour of the weekdays, from where the planetary rulers of the days were then deduced. The underlying order of the planets reflects their distance from the earth:[21]

> The order of the stars in relation to the days is as follows: Sun, Moon, Mars, Mercury, Jupiter, Venus, Saturn. The arrangement of the zones is: Saturn, Jupiter, Mars, Sun, Venus, Mercury, Moon. From this arrangement the hours receive their designation, from the hours the day of the star one after the other.

[20] Franz Boll, art. "Hebdomas" in *Paulys Realencyclopädie der classischen Altertumswissenschaft*, vol. 14 (München, 1912), col. 2547–2578, on col. 2556; cf. also A. Bouché-Leclercq, *L'Astrologie Grecque* (Paris, 1899), pp. 476–486, and Wilhelm Gundel, *Sternglaube, Sternreligion und Sternorakel* (Heidelberg,[2] 1959), pp. 104–110.

[21] Vettius Valens, *Anthologiae*, ed. David Pingree (Leipzig, 1986), pp. 25–26.

In other words, Vettius Valens assumes that the first hour of Saturday was given to Saturn, the second to Jupiter, the third to Mars etc. until one reaches the seventh hour, which belongs to the moon. Then one returns to the beginning and attributes the eighth hour to Saturn etc. If one follows this paradigm, the planetary ruler of the 24th hour of Saturday is Mars, so that the planet ruling the first hour of Sunday automatically turns out to be the Sun. Accordingly, the ruler of the first hour of a day is always also the planetary ruler of the whole day:

Saturday	
1., 8., 15., 22.	Saturn
2., 9., 16., 23.	Jupiter
3., 10., 17., 24.	Mars
4., 11., 18.	Sun
5., 12., 19.	Venus
6., 13., 20.	Mercury
7., 14., 21.	Moon
Sunday	
1., 8., 15., 22.	Sun
2., 9., 16., 23.	Venus
3., 10., 17., 24.	Mercury
4., 11., 18.	Moon
5., 12., 19.	Saturn
6., 13., 20.	Jupiter
7., 14., 21.	Mars
Monday	
1., 8., 15., 22.	Moon
etc.	

It was repeatedly argued that the whole system of planetary rulers of the weekdays and the hours must go back to Jewish origins. Based on a rather complex argument Solomon Gandz, for example, was convinced that it is purely Jewish invention: As we have seen above, the whole system logically starts with Saturn as the first planetary ruler. Now, Saturn's rule falls on Tuesday evening 6 p.m. This, however, is quite conspicuous, because such a fixation seems to presuppose that the stars were created on that day, just as it can be found in Gen 1:14–19. Gandz therefore believes that the creation of the stars "was the natural point of departure for the cycle of the planetary hours, and this first hour was dedicated to Saturn, and all the rest followed the

natural and generally accepted order of the planets—i.e. שצ״ם חנכ״ל, or SaJuMa SuVeMeMo." Accordingly, he comes to the conclusion that from a historical point of view this system was introduced in Rome in the second century BCE (p. 224) by Jewish astrologers, who were familiar with the biblical account of the creation.[22]

However speculative Gandz's interpretation might be, some kind of Jewish influence on the development of the system of planetary rulers cannot be ruled out. In chapter I:10 of Vettius Valens' *Anthologiae*, for example, which bears the title "On the heptazônos, [i.e. the sabbatical day]—off-hand" we find the opening words: "About the week [and the sabbatical day] it is like this…".[23] The references to the Sabbath in this passage are considered by David Pingree, the editor of the most recent critical edition of the *Anthologiae*, as later glosses. This possibility cannot be ruled out. On the other hand, it should be noted that pagan authors also quite often explain Jewish Sabbath observance as being related to the dominance of Saturn on this day.[24] Not all of them, however, necessarily deduce from this fact that the whole system of planetary rulers must be of Jewish origin. Dio Cassius, for example, a pagan historian of the second century CE, reports in a long chapter of his *Roman History* (XXXVII, 18), which deals with the Jewish God and the observance of the Sabbath:[25]

> Now as for him, who he is and why he has been so honored, and how they got their superstitious awe of him, accounts have been given by many, and moreover these matters have naught to do with this history. The custom, however, of referring the days to the seven stars called planets was instituted by the Egyptians, but is now found among all mankind, though its adoption has been comparatively recent; at any rate the ancient Greeks never understood it, so far as I am aware. But since it is now quite the fashion with mankind generally and even with the Romans themselves, and is to them already in a way an ancestral tradition, I wish to write briefly of it, telling how and in what way it has

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[22] Solomon Gandz, "The Origin of the Planetary Week or The Planetary Week in Hebrew Literature," in *PAAJR* 18 (1948/49): 213–254.

[23] Vettius Valens, *Anthologiae*, ed. David Pingree (Leipzig, 1986), pp. 25; cf. also Menahem Stern, *Greek and Latin Authors on Jews and Judaism*, vol. 2 (Jerusalem, 1980), p. 174.

[24] Cf. Louis H. Feldman, *Jew and Gentile in the Ancient World* (Princeton, 1993), pp. 158–167 and Peter Schäfer, *Judeophobia. Attitudes toward the Jews in the Ancient World* (Cambridge/Mass. and London, 1997), pp. 82–92.

[25] Dio Cassius, *Roman History*, translated by E. Cary, vol. 3 (Cambridge/Mass. and London, 1914), pp. 129–131 (Loeb Classical Library).

> been so arranged. I have heard two explanations, which are not difficult of comprehension, it is true, though they involve certain theories. For if you apply the so-called 'principle of the tetrachord' (which is believed to constitute the basis of music) to these stars, by which the whole universe of heaven is divided into regular intervals, in the order in which each of them revolves, and beginning at the outer orbit assigned to Saturn, then omitting the next two name the lord of the fourth, and after this passing over two others reach the seventh, and you then go back and repeat the process with the orbits and their presiding divinities in this same manner, assigning them to the several days, you will find all the days to be in a kind of musical connection with the arrangement of the heavens. This is one of the explanations given; the other is as follows. If you begin at the first hour to count the hour of the day and of the night, assigning the first to Saturn, the next to Jupiter, the third to Mars, the fourth to the Sun, the fifth to Venus, the sixth to Mercury, and the seventh to the Moon, according to the order of the cycles which the Egyptians observe, and if you repeat the process, covering thus the whole twenty-four hours, you will find that the first hour of the following day comes to the Sun. And if you carry on the operation throughout the next twenty-four hours, in the same manner as with the others, you will dedicate the first hour of the third day to the Moon, and if you proceed similarly through the rest, each day will receive its appropriate god. This, then, is the tradition.

Accordingly, the degree of Jewish contribution to the development of the planetary week in general is difficult to assess. It seems quite likely, however, that the planetary week is the product of a long process of assimilation and amalgamation of different but parallel elements, some of which were Jewish, others Egyptian and others Greek or Roman. Accordingly, far-reaching hypotheses as to the great age of Jewish familiarity with the system of planetary weekdays and hours are unfounded and moreover not corroborated by the observations about the beginnings of planetary astronomy and astrology in Judaism made in this paper. As we will see, there are no unambiguous sources testifying to the possibility that Jews used the concept of planetary rulers prior to the turn of the 3rd century CE.

One of the first pieces of evidence for a Jewish acquaintance with the system of planetary rulers of weekdays and hours is to be found in a *sugya* from the Babylonian Talmud (bEr 56a), which we had occasion to mention above. In this text Mar Shemuel exposes his astronomical theories about the *tequfot* and the length of the solar year, but occasionally also slips into the field of astrology predicting that the occurrence of the *tequfot* in the hour of Jupiter will bring forth heavy (Nisan) and hot (Tevet) winds:

> And Shemuel said: There is no *tequfah* of Nisan, which falls in (the hour of) Jupiter and does not fell the trees, and there is no *tequfah* of Tevet, which falls in (the hour of) Jupiter and does not dry the seeds.[26]

For a slightly later period we can observe that the concept of the solar cycle of 28 years and the association of the hours of the *tequfot* with the planets even appears in halakhic discussions. In bBer59b we find the *barayta*:

> Our rabbis taught: He who sees the sun in its *tequfah*, the moon in its strength, and the stars in their paths and the *mazzalot* in their order, says: Blessed be He who made the creation,[27]

which in all likelihood originally meant nothing but that one is obliged to say a benediction whenever one sees the sun on the days of the equinoxes and solstices, the full moon, the stars and the *mazzalot*. This, the redactors of the Talmud may have observed, might happen quite often, so that consequently the following Talmudic discussion tries to limit this practice to a much rarer occasion. "When does this happen?" (ואימת הוי?) they ask, and then provide us with an answer, which was given by a Babylonian amora of the fourth generation (ca. 280–339 CE):

> Abbaye said: Every 28 years, when the cycle repeats itself and the *tequfah* of Nisan falls in (the hour of) Saturn in the evening of Tuesday before the morning of Wednesday.[28]

The literary evidence thus indicates that the system of the planetary rulers for weekdays and hours was adopted in rabbinic Judaism in close connection with the theories concerning the calculation of the *tequfot* and the length of the tropical solar year.[29]

We can, however, go one step further: If we try to interpret our earliest piece of evidence quoted above—i.e., Bar Qappara's dictum in bShab 75a that "everyone who knows to calculate the *tequfot* and

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[26] bEr 56a: ואמר שמואל: אין לך תקופת ניסן שנופלת בצדק שאינה משברת את האילנות ואין לך תקופת טבת שנופלת בצדק שאינה מייבשת את הזרעים.

[27] bBer59b: הרואה חמה בתקופתה לבנה בגבורתה וכוכבים במסילותם ומזלות בסדרן אומר: ברוך עושה בראשית.

[28] bBer59b: אמר אביי: כל עשרים ושמונה שנין והדר מחזור ונפלה תקופת ניסן בשבתאי באורתא דתלת נגהי ארבע.

[29] The passage bEr 56a adds: והוא (והני מילי) דאיתליד לבנה או בלבנה או בצדק—"and this is the case if the New Moon is born either in (the hour of) the moon or of Jupiter." However, this transposition of the calculation of the *tequfot* to the New Moon is clearly secondary, both in literary and historical terms.

mazzalot and does not calculate (them)—Scripture says about him (Is 5:12): *And they do not look at the work of the Lord and the doing of his hands they did not see*," we may ask ourselves, what the obligation to calculate the *tequfot* and *mazzalot* actually means? If the term *tequfot* is unambiguous, what does the term *mazzalot* mean in this context? A close reading of the Talmudic texts reveals that *mazzalot* must be interpreted in a specific technical meaning as referring to the ruling planet: Whoever is able to calculate the hour of the *tequfah* and to find out the *ruling planet* (*mazzal*) of this hour is obliged to do so! In other words, Bar Qappara's dictum can be seen *cum grano salis* as being the earliest rabbinic evidence for the practice of planetary astrology as a *mitzvah*, which is considered by R. Yohanan to be nothing less than *your wisdom and your understanding in front of the people* (Deut 4:6).

This interpretation is based upon the philological assumption that in all the texts quoted above the word *mazzal* designates "ruling planet" in the technical sense rather than "sign of the zodiac" or any other astral constellation, as is current in later rabbinic and medieval Hebrew.[30] Such an interpretation, however, is corroborated by a comparison with other Talmudic sources. The most famous among these is the discussion about Israel's subordination to the *mazzal* in bShab 156a-b,[31] where *mazzal* is again used in the specific sense of "planetary ruler":[32] The *sugya* begins with a long quotation from a *pinqas* attributed to Yehoshua' ben Levi, a Palestinian amora of the first generation. It contains simple genethlialogical prognostications according to the weekday on which a person was born. These prognostications are interspersed with numerous minor discussions and interpretations attributed to later amoraim such as Rav Ashi or R. Nahman bar Yizhaq. The main focus of this "interlinear" commentary, however, is the attempt to provide a systematic foundation of the moral characteristics attributed to a person born on a specific day in the events of the seven days of creation. It is striking that in this context the prognostications given in the *pinqas* generally agree with the symbolism

[30] In biblical Hebrew the word *mazzalot* appears only once in I Reg 23:5 in the expression לבעל לשמש לירח ולמזלות ולכל צבא השמים, which does not allow any definite conclusion regarding the exact meaning of the word.

[31] For detailed discussions of this passage cf. Stuckrad, *ibid.* pp. 460–480; Leicht, *ibid.*, pp. 90–94.

[32] Cf. also bAZ 42b, "all the *mazzalot* permitted, apart from the *mazzal* of the sun and the moon", which again allows an association with the planets rather than with the signs of the zodiac or other astral constellations.

deduced from the creation story, whereas they disagree with what one would find in the classical astrological teachings about the "planetary character" of persons.[33] Therefore, it seems quite likely that Yehoshuaʿ ben Levi intentionally tried to eliminate everything astrological in his short "genethlialogical treatise" by replacing them with biblical symbolism.

On the other hand, it is patent that the following Talmudic discussion did not follow the Palestinian amora in this line. The Talmud totally ignores the anti-astrological intention of Yehoshuaʿ ben Levi's *pinqas* and bluntly re-inserts astrology by telling us:

> R. Hanina said to them: Go and tell the son of Levi that it is not the *mazzal* of the day but the *mazzal* of the hour which exercises its influence,[34]

as if Yehoshuaʿ spoke in his *pinqas* of *mazzalot* rather than of the days of creation! What follow in the name of R. Hanina, however, are purely astrological prognostications, which—this time—are in total agreement with the moral qualities of the planets in classical astrology. The exact details of these prognostications expounded in bShab 156a are of little interest for us here. What is important for us is the fact that here the term *mazzalot* is used for the planetary rulers (*mazzalot*), which are being transposed here from the field of *tequfot*-astrology to the field of horoscopic astrology.[35]

Another piece of evidence for planetary astrology from the same period of time is preserved in bShab 129b, where several issues related to blood-letting are being discussed. Here, Shemuel again proves to be a competent astrologer, when he declares:

> Shemuel said: Blood-letting on Sunday, Wednesday and Friday. […] Why not Tuesday? For Mars rules an even-numbered hour. But on Friday, too, it rules an even-numbered hour?! Seeing that the majority of the people are in the habit of doing it (on Friday, we say:)—*The Lord preserves the simple-minded* (Ps 116:6).[36]

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[33] E.g., the *pinqas* predicts that a person born on Tuesday will be a fornicator. This has, of course, nothing to do with the character of Mars, the planet ruling the third day of the week. It rather reflects the fact that on this day the grasses were created, which widely spread their seed (Gen 1:11).

[34] bShab 156a–b: אמר להו רבי חנינא: פוקו אמרו ליה לבר לואי לא מזל יום גורם אלא מזל שעה גורם.

[35] Cf. also the following passage in bShab 156a: איתמר רבי חנינא אומר מזל מחכים מזל מעשיר ויש מזל לישראל. רבי יוחנן אומר אין מזל לישראל.

[36] bShab 129b: אמר שמואל: פורסא דדמא חד בשבתא ארבעה ומעלי שבתא. אבל שני וחמישי—לא דאמר מר: מי יש לו זכות אבות יקיז דם בשני ובחמישי שבית דין

To sum up, we can observe that a vivid interest in calendar reckoning prevailed at the turn of the 2nd to the 3rd century CE. These efforts yielded the fixation of the solar year and brought about the adoption of methods for the determination of the four *tequfot*. In order to designate these points of the annual cycle, the rabbis did not hesitate to adopt the practice of using the planetary rulers for the hours and days, which was a common heritage of the Greco-Roman *oikumene*. This cultural adoption gave rise to the application by the rabbis of certain astrological techniques for some aspects of mundane astrology (bEr 56a), which were also transposed to the casting of primitive horoscopes (bShab 156a–b) and the fixing of the correct day for blood-letting (bShab 129b). In other words, through the halakhic practice of calendar reckoning by the planets, the outcasts of the Second Temple period tacitly passed over in the earlier sources, found entrance into the cultural world of the rabbis, and with them a halakhically legitimate practice of astrology came into being.

"Jewish astrology" in later centuries

The interwoven development of calendar reckoning and the adoption of astrological practices had great repercussions in later Jewish history. Numerous sources provide evidence that mainly the astrological techniques related to the calculation of *tequfot* and the planetary rulers gained a place of honor in later Jewish cultural history. Legitimized through the role in calendar calculations, it is no surprise that the system of planetary rulers found its way also into numerous literary works of the later layers of rabbinic literature.[37]

On the theoretical level, the system of planetary rulers was widely accepted in Jewish sources. It was known, for example, to the author of the *Pirqe de-Rabbi Eliʿezer*, who deals with it extensively in chapters 6–8 of his work,[38] and it is described in detail in a few passages transmitted in the context of the so-called *Barayta di-Shemuʾel*.[39] Shabbetai

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של מעלה ושל מטה שוין כאחד. בתלתא בשבתא מאי טעמא לא—משום דקיימא ליה מאדים בזווי. מעלי שבתא נמי קיימא בזווי. כיון דדשו ביה רבים—*שומר פתאים ה׳*.

[37] For a useful collection of many relevant texts cf. Gandz, *ibid.*, but his datings and the identification of literary works is often erroneous.

[38] Cf. Leicht, *ibid.*, pp. 82–89.

[39] Ed. J. D. Eisenstein, *Ozar Midrashim*, vol. 2, pp. 543 and 544.

Donnolo (10th century CE) accepts it as binding scientific truth in his commentary on *Sefer Yezirah* IV: 5–11.[40]

The appearance of the system of planetary rulers in the Babylonian Talmud made possible the entrance of astrological doctrines into the Jewish schoolhouses in medieval Europe, too.[41] To give a few examples of this, it should be noted that Rashi displays full acquaintance with the system of the planetary rulers of the hours in his commentaries on bBer 59b, bShab 129b, bShab 156a–b and bEr 56a. Accordingly, it does not come as a total surprise that this theory can also be found in a 12th-century Ashkenazi Bible commentator like Bekhor Shor, who uses the completion of the weekly cycle of the planetary rulers as an explanation to an inherent interpretative difficulty in the verse Gen 2:2, which claims that God completed the creation on the seventh day, although He must have rested on Sabbath.[42] Later on, Eleʿazar of Worms provides lengthy texts on the system of the planetary rulers borrowed from Shabbetai Donnolo in his own commentary on the *Sefer Yezirah*,[43] which in turn were identified as Eleʿazar's own words in a commentary of the 13th-century writer Abraham ben Azriel in his book *ʿArugat ha-Bosem*.[44]

As we have observed above, the calculation of the *tequfot* was closely linked with the adoption of the system of planetary rulers of the days, the hours and astrological practices from the very beginning. After all, it was none other than Mar Shemuel, who had stated that "There is no *tequfah* of Nisan which falls in (the hour of) Jupiter and does not fell the trees, and there is no *tequfah* of Tevet, which falls in (the hour of) Jupiter and does not dry the seeds" (bEr 56a). In more general terms, however, the divinatory relevance of the *tequfot* brought forth beliefs concerning the prohibition to drink water on these days,[45] but it also

[40] Ed. D. Castelli, *Il Commento di Sabbatai Donnolo sul Libro della Creazione* (Firenze, 1880), pp. 61, 70 and 71–72.

[41] For a more detailed discussion of these processes cf. Reimund Leicht, "The reception of astrology in medieval Ashkenazi culture," *Aleph* (forthcoming).

[42] Bekhor Shor on Gen 2:2 (ed. Y. Nevo; Jerusalem 1994, pp. 8–9).

[43] Ed. M. Shapira, *Ha-R"' Mi-Garmayza ʿal Sefer Yezirah* (Przemysl, 1883), fol. 9c.

[44] Ed. E. E. Urbach, Abraham ben Azriel known as *ʿArugat ha-Bosem* (Jerusalem, 1939–1963), vol. 2, pp. 210–211.

[45] Cf. the responsa by Hai and Sherira Gaon, in *Zikhron kamah ge'onim,* ed. A. E. Harkavy (Berlin, 1887), pp. 206–208. The belief in the astrological influence of the *tequfot* and the prohibition of drinking water on them is discussed in a responsum of Hai Gaon's in *Hemdah genuzah,* ed. Z. Wolfensohn (Jerusalem: Y. Back, 1863), fol. 29v; on this text see Israel Ta-Shema, "The Danger of Drinking Water During the

yielded a number of popular astrological texts, which can be called authentic products of "Jewish astrology."

One of the most popular texts is a little booklet, which contains predictions of wheat-prices according to the part of the month on which the *tequfah* of Tevet falls (*Sha'ar ha-Hittin*). Since it is attested in early fragments from the Cairo Genizah and was written in Palestinian Aramaic, it probably stems from Palestine in the late Byzantine or early Islamic period.[46]

Specifically based on the system of planetary rulers is a small astrological work providing short predictions for the beginning of actions (*katarchai*) and simple horoscopes for the children born in every single planetary hour of the week. This text was extremely popular in the Jewish Middle Ages. It is preserved in at least two manuscripts from the Cairo Genizah (one in Babylonian Aramaic, the other one in Hebrew), and numerous medieval European manuscripts.[47] The text often bears the title *Shimmush HaNKaL ShaZaM*, and was also incorporated at the end of the manuscripts and the printed edition of Ele'azar of Worms's commentary on the *Sefer Yezirah*[48] and in the *Sefer Gematriot* attributed to Judah he-Hasid.[49]

One of the most prolific fields of "Jewish astrology," however, was prognostications for the *tequfot*, which can be found in calendar handbooks, liturgical manuscripts and mystical treatises. Only examples of these texts can be mentioned here. An important early example of calendar handbooks with astrological appendices is the manuscript Or. Oct. 352 (Steinschneider 221) of the Staatsbibliothek in Berlin. It was presumably written around 1300 and bears the title *Sod ha-'Ibbur*. Two and a half folios at the end of this handbook contain astrological prognostications, most of them referring to the *tequfot* (and *moladot*)[50]

Tequfah: The History of an Idea" (Heb.), *Jerusalem Studies in Jewish Folklore* 17 (1995): 21–32, on pp. 21–22 (with references to earlier studies). This belief was also known to Muslim scholars like al-Bīrūnī (973–1048); cf. Bernard R. Goldstein, "Astronomy and the Jewish Community in Early Islam," *Aleph* 1 (2001): 17–57, on p. 28.

[46] Cf. Leicht, *Astrologumena Judaica*, pp. 73–75.

[47] Cf. Leicht, *ibid.*, pp. 94–96.

[48] Ed. M. Shapira, ibid., fol. 20c–21c.

[49] Ed. Y. Israel, *Sefer Gematriot le-had min qamai Rabbenu Yehudah he-Hasid ZLH"H* (Jerusalem, 2005), pp. 256–264, based upon the facsimile edition *Sefer Gematriot of R. Judah the Pious. Facsimile Edition of a Unique Manuscript,* edited by D. Abrams and I. Ta-Shema (Los Angeles, 1998), ff. 25r–29v.

[50] Astrological prognostications for the New Moon (*molad*) are much less frequent than those for the *tequfot*. A close connection of both aspects, however, is already

and using the system of planetary rulers.[51] Later *Sifre 'Evronot* perpetuate this custom.[52]

From calendar handbooks these texts migrated to liturgical manuscripts, which often contain appendices on calendar issues, too. An early example of this is the manuscript Sassoon 535 (now Klagsbald), which preserves one of the earliest testimonies for the *Mahzor Vitry*. It was written in France in the middle of the 12th century, but contains on pp. 451–453 two short astrological texts on the *moladot* and the planets added by a slightly later hand.[53] Later on, we can encounter much more elaborate collections of cognate texts in the Italian *Sefer ha-Tadir* written by Moshe ben Yequtiel de Rossi (1380).[54] Presumably via Italy such appendices reached Yemen in the 17th century, where astrological *tequfot*- and *moladot* prognostications based on the system of planetary rulers can be found regularly in liturgical manuscripts, too.[55]

Finally, astrological texts on the planets and the *tequfot* also found their way into medieval Jewish esoteric works such as Ele'azar of Worms's *Sode Razzaya*, although generally speaking these works themselves display a slightly more developed knowledge of planetary astronomy and astrology than the former traditions.[56]

Planetary astrology thus became an inseparable part of traditional Jewish learning in the Middle Ages. Little can be said about the exact date and origin of each of these medieval samples of astrology. One might assume that some of them might well be much older than their first attestation in medieval manuscripts, but this remains guesswork. At any rate, there can be no doubt that the enormous popularity of *tequfot*-astrology closely associated with the system of planetary rulers of the days and the hours, which can be observed in medieval Judaism, finds its ideological and pragmatic justification nowhere else than in the Talmudic tradition itself. Mar Shemuel's astrological dictum about

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indicated by a short addition in bEr 56, which follows Mar Shemuel's dictum about the influence of Jupiter on the *tequfot* quoted above: ואמר שמואל: אין לך תקופת ניסן שנופלת בצדק שאינה משברת את האילנות ואין לך תקופת טבת שנופלת בצדק שאינה מייבשת את הזרעים, *והוא דאיתליד לבנה או בלבנה או בצדק*.

[51] For a more detailed description of this manuscript cf. Leicht, *ibid*., pp. 115–116.

[52] Cf., e.g., Berlin, Staatsbibliothek, Or. quart. 692 (Steinschneider 225; Germany, 1715); on this manuscript cf. Leicht, *ibid*., pp. 145–147.

[53] Cf. Leicht, *ibid*., p. 111.

[54] Cf. Leicht, *ibid*., pp. 123–130.

[55] Cf. Leicht, *ibid*., pp. 177–184.

[56] Ed. Sh. Weiss, pp. 71–73.

Jupiter's influence on the *tequfot* was both the first echo *of*, but even more so a powerful catalyst *for* the development of a halakhically sanctioned brand of "Jewish astrology." At the turn of the 2nd and 3rd century CE we are thus witnesses to the birth of an astrology which possesses its proper *Sitz im Leben*, its ideological roots and its proper practical context within rabbinic culture.[57] This cultural phenomenon with its repercussions on later Jewish history can thus be justly called authentic "Jewish astrology."

[57] For a short discussion on the attitude of the rabbis towards astrology cf. Y. Harari, "The Sages and the Occult," J. Schwartz, P. Tomson, Z. Safrai (eds.), *COMPENDIA RERUM IUDAICARUM AD NOVUM TESTAMENTUM II/3b—The Literature of the Sages, Second Part: Midrash and Targum, Liturgy, Poetry, Mysticism, Contracts, Inscriptions, Ancient Science and the Language of Rabbinic Literature*, Assen 2006, pp. 521–564 (on pp. 558–64).