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THE ZODIAC SIGN NAMES IN THE DEAD SEA SCROLLS (4Q318): FEATURES AND QUESTIONS

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Abstract

The Aramaic zodiac in the Dead Sea Scrolls, contained in *4Q318 Zodiac Calendar ar and Brontologion*, found in Cave 4 at Qumran, has similarities and differences to Babylonian and Hellenistic zodiacs. This information may help to identify the cultural influences in the Aramaic version in the Dead Sea Scrolls, the only extant such zodiac from an ancient primary source. This paper will show how *4Q318 Zodiac Calendar* functions both in relation to the Jewish calendar and to the Babylonian calendar. Using data from Rochberg's *Babylonian Horoscopes*, it will demonstrate empirically why the text should be regarded not as Mesopotamian or Hellenistic, but as a Jewish zodiac calendar.

This research is part of the presenter's Ph.D dissertation, "*4Q318 Zodiac Calendar and Brontologion ar* reconsidered and implications for the calendars in the Dead Sea Scrolls." (The University of Manchester, 2009).

The Dead Sea Scrolls comprise of the remains of some 900 manuscripts mainly in Hebrew and Aramaic found in caves around Qumran and the Dead Sea dating from possibly the late third century B.C.E. to the first half of the first century C.E. These fascinating archives contain the earliest primary sources of books of the Bible and the literature of different Jewish groups: documentary texts, fiction, poetical prayers, calendars, religious laws and rules, and a small amount of astrological material.

This paper focuses on an intriguing Aramaic calendrical and astrological scroll from Qumran, 4Q318, *Zodiology and Brontology ar,* a text that consists of a 360-day zodiac calendar followed by a zodiacal thunder omen text.[1] Here,

[1] I am grateful to Philippe Guillaume and Sandra Jacobs for their useful comments on an earlier draft of this paper. Any shortcomings are, of course, my responsibility.

J.C. Greenfield and M. Sokoloff, "318. 4QZodiology and Brontology ar [Aramaic]," in S. Pfann, and P. Alexander et al, *Qumran Cave 4. 26. Cryptic Texts and Miscellanea, Part 1* (Discoveries in the Judaean Desert [hereafter DJD] 36; Oxford: Clarendon, 2000), 259, 262–274, pls. 15, A. Yardeni, (Paleography) 259–61, pl. 16; D. Pingree "Astronomical Aspects," 270–2, tables 1–3, 273–4; The *editio princeps* of 4Q318 is a slight revision of the preliminary report by Greenfield and Sokoloff with Pingree and Yardeni, "An Astrological Text from Qumran (4Q318) and Reflections on Some Zodiacal Names," *RevQ* 16/ 64 (1995): 507–25. The suffix "4Q" means Qumran cave 4; ar = Aramaic.

I discuss the distinctive names of the zodiac signs in the scroll as these are a rich source of chronological and cultural information about the process of the transmission of astrology and astronomy to Judea. I will investigate the background to significant sign names in the Qumran zodiac in order to answer the question of whether there were any distinctive elements to the zodiac of 4Q318 compared to the zodiacs in the surrounding cultures, and if so, whether these variations were meaningful in the context of Qumran and Judean society.

4Q318 is dated to around the turn of the era, the end of the Herodian period [37 B.C.E.–4 B.C.E].[2] It contains the sole surviving calendar found at Qumran that uses the Babylonian-Aramaic month-names combined with zodiac signs. It is the only omen text in Dead Sea Scrolls and the only complete zodiac found in any manuscript from Qumran. I have retitled the scroll, 4Q318, *4QZodiac Calendar and Brontologion* to clarify its purpose: the "zodiology" in the official title refers to a text that gives a prognosis based on a zodiac sign in a calendar.[3] The section 4Q318 iv, vii–viii 1–6a (hereafter *4QZodiac Calendar*) is a self-contained zodiac calendar (see The Qumran zodiac calendar, below).

The omen text, 4Q318 viii 6b–9, the brontologion (hereafter *4QBrontologion*), which is also in Aramaic, consists of predictions for the king and the country, according to the place of the moon in the zodiac when thunder occurs. Just three and half lines of text survive, following the end of the zodiac calendar when the moon is in Aries. These give the forecasts for when the moon is in Taurus, or Gemini at the sound of thunder. Only the sign name, Gemini, is extant;[4] it is the same as that in *4QZodiac Calendar*. The text of *4QBrontologion* is included here for the sake of completeness (see Fig.1).

Fig. 1 4QBrontologion 4Q318 6b–9

6 דכר[א] *vacat* [אם בתורא] ירעם מסבת על[
7 [ו]עֻמל למדינתא וחרבْ [בד]רת מלכא ובמדינת אב[
8 להוא ולערביא[ ]א כפן ולהוון בזזין אלן בא[לן] *vacat*
9 *vacat* אם בתאומיא ירעם דחלה וסרע מנכריא ומ[

6. Aries. *Vacat* [If in Taurus] it thunders (there will be) *msbt*[5] against
7. [and] affliction for the province, and a sword [in the cou]rt of the king and in the province of Ab[

[2] Yardeni. A, "Palaeography," in "318: 4QZodiology and Brontology," DJD 36, 260.

[3] B. Böck, "'An Esoteric Babylonian Commentary' Revisited" *JAOS*, 120:4 (2004), 617, 618–19 n. 29, cites W.Gundel and H.G. Gundel, *Astrologumena* (SA 6; Wiesbaden: Franz Steiner Verlag, 1966), 269; Erica Reiner, "Early Zodiologia and Related Matters," in *Wisdom, Gods and Literature* (ed. A.R. George and I.L. Finkel; Eisenbrauns: Winona Lake, IN, 2000), 421–27; E. Svenberg, *Lunaria et Zodiologia Latina* (SGLG 16; Göteborg: AUG, 1963), 3–12.

[4] See M. Wise, *Thunder in Gemini And Other Essays on the History, Language and Literature of Second Temple Palestine* (JSPSup 15. Sheffield: Sheffield Academic Press, 1994), 13–50.

[5] The uncertain second letter is discussed above.

> 8. will be. And to the Arabs [ ], hunger, and they will plunder each oth[er *vac]at vacat* If in Gemini it thunders, (there will be) fear and sickness from the foreigners and *m*[
>
> (Transliteration and translation by Greenfield and Sokoloff, DJD 36, 263–4 {modified})

In order to get a sense of the mixed cultural sources and the context of the zodiac calendar at Qumran, I briefly consider the background to the month-names, another astrological scroll from Qumran, way the calendar probably works and its possible origins. The background to the zodiac in 4Q318 is then be explored.

RELATED TEXTS (1) MONTH NAMES

The Babylonian-Aramaic month-names, two of which survive in *4QZodiac Calendar*: months 11 and 12, Shevat and Adar (4Q318 cols. vii and viii), are known from the Bible (see below) and the Hebrew calendar. The names of the months missing in 4Q318, from month 1 to the first half of month 10, are: Nisan, Iyyar, Sivan, Tammuz, Ab, Elul, Tishri, Marchesvan, Kislev, Tevet.

Babylonian-Aramaic month-names appear in the late biblical Books of Ezra, Nehemiah, Esther and Zechariah,[6] and in the 5th century B.C.E. Passover Papyrus and other legal documents from Elephantine.[7] There are a substantial number of documentary texts from the Persian period which antedate the Dead Sea Scrolls and employ Babylonian-Aramaic month-names. The majority of early texts in this category comprise a substantial number of mid-4th century B.C.E. Samaria papyri from Wadi Daliyeh, mainly of slave sale documents and other legal deeds with dates. Most of the corpus was written during the reign of Artaxerxes III Ochus (358–337 B.C.E).[8] One document dates to the reign of

[6] Ezra 6:15, Neh 1.1, 2:1, Esth 2:16, 3:7, 7, 13, 8:9, 12, 9:1, 15, 17, 19, 20, Zech 1:7, 7:1; D. Talshir and Z. Talshir, "Double Month Naming in Late Biblical Books: A New Clue for Dating Esther?" *VT* 54:4 (2004): 549–54.

[7] Herr, "The Calendar," 836–7; B.Porten, *Archives from Elephantine* (Berkeley: University of California Press, 1968), 128–130, 311–314, pl. 9; B. Porten and A. Yardeni (eds), *Textbook of Aramaic Documents from Ancient Egypt*, vol 1 (Jerusalem: Hebrew University, 1986) Passover Papyrus: A4.1; B.Porten, "The Calendar of Aramaic Texts from Achaemenid and Ptolemaic Egypt," in *Irano-Judaica II* (ed. S. Shaked and A. Netzer, Jerusalem: Ben-Zvi Institute, 1990), 13–32; B. Porten, et al. *The Elephantine Papryi in English*. (*DMOA* 22. Leiden: Brill, 1996), 81–82, Passover Papyrus: B13: 125–6; Sacha Stern, "The Babylonian Calendar at Elephantine," 159–171; Stern, *Calendar and Community*, 28–30; VanderKam, *Calendars* (1998), 114.

[8] D.M.Gropp, *Wadi Daliyeh II: The Samaria Papyri from Wadi Daliyeh* (DJD 28; Oxford: Clarendon, 2001), 3.

Artaxerxes II Memnon (375–365 B.C.E)[9] and another, WDSP 1, dates to the second year of Darius III (335 B.C.E).[10]

The scrolls from Judea containing the Aramaic-Babylonian month names that antedate 4Q318 include *4Q345Deed ar or Heb*, possibly from Naḥal Ḥever[11] (373–171 B.C.E, carbon-dating, but glue-contaminated).[12] At Qumran, in addition to 4Q318, the Babylonian-Aramaic calendar month-names are found only in: 4Q332 (*4QHistorical Text D*) (c. 25 B.C.E.) frag. 2 2: שבט (Shevat),[13] and possibly in 4Q322a (*4QHistorical Text H?*) frag. 2 5:] למ[רח]שון [(of Ma[rhe] shvan),[14] but the latter is part-restored and uncertain.

RELATED TEXTS (2): ASTROLOGY

4Q318 is not the only scroll containing zodiac signs unearthed at Qumran. There is one other extant zodiacal manuscript in the Dead Sea Scrolls, 4Q186 *4QZodiacal Physiognomy*. This consists of the remains of an astrological handbook, which ostensibly enables the user to assess a subject's zodiac sign and their character from their physical facial and bodily features.[15]

[9] Gropp, DJD 28, 3.

[10] Gropp, DJD 28, 3, 30–36. Papyri with extant dating formulae: WDSP 1.1 (20th Adar) (Plate 1); 2.12 ([Tebe]t) (Plate 2); 3.11–12 (3rd Shevat) (Plate 3); 4.1 (Plate 4); 5.1 (Plate 5); 7.19 (5th Adar) (Plate 7); 8.12–13 (Plate 8); 9.15–16 (Plate 9); 10.recto 1.12 (Plate 10); 12. 10–11 (Plate 13. only); 14.1 (Plate 16 only); 15.1 (Plate 16); 16.1 (Plate 17 only); 17.1–2, 8–9 (Plate 18. only); 18.11 (Plate 19); 19.1 (Plate 20. only); 20.1 (Plate 20. only); 22.10–11 (Plate 21. only). See: J. Dušek, *Les manuscripts araméens du Wadi Daliyeh et la Samarie vers 450–332 av.J-C* (Leiden: Brill, 2007).

[11] A. Yardeni, DJD 27, 292–295, fig. 29, pl. 56. Cf: H. Eshel, "4Q348, 4Q343 and 4Q345: Three Economic Documents from Qumran Cave 4?" *JJS* 52 (2001): 132–135. Eshel argues that the documents came from Qumran.

[12] A.J. Timothy Jull, et al, "Radiocarbon Dating of Scrolls and Linen Fragments from the Judaean Desert," *Radiocarbon* 37:1 (1995), 11–19 (esp. 12). 4Q345: באלול (in Ellul) Recto, upper version, line 1; lower version, line 10 (Yardeni, DJD 27), 292–3.

[13] J. Fitzmyer, DJD 36, 281–6 (at 283–4). pl. 17; K. Atkinson, "Representation of History in 4Q331 (4QpapHistorical Text C), 4Q332 (4QHistorical Text D), 4Q333 (4QHistorical Text E), and 4Q465e (4QHistorical Text F): An Annalistic Calendar Documenting Portentous Events?" *DSD* 14.2 (2007): 125–151; Atkinson dates *4QHistorical Text D* to "no earlier than 65 B.C.E" on the grounds of the possible historical references; B.Z. Wacholder and M.G. Abegg, *A Preliminary Edition of the Unpublished Dead Sea Scrolls*, fasc. 1 (Washington D.C.: BAS, 1991), 80–81, 84–5; G. J. Brooke, "Types of Historiography in the Dead Sea Scrolls," in *Ancient and Modern Scriptural Historiography* (ed. G. J. Brooke and T. Römer; Leuven: Leuven University Press, 2007), 221; J. Fitzmyer, DJD 36, 275; S. Talmon and J. Ben-Dov, "*Mišhmarot* Lists (4Q322–324c) and 'Historical Texts' (4Q322a; 4Q331–4Q333) in Qumran Documents" in *Birkat Shalom* (ed. C. Cohen. Vol 2. Winona Lake: Eisenbrauns, 2008), 297–242.

[14] E.J.C Tigchelaar, "4Q322a Historical Text H?" in DJD 28 (ed. D.M. Gropp; Oxford: Clarendon, 2001), upper recto, line 1, lower recto, line 10 [reconstructed]), 125–8, pl. 40.

[15] J. Allegro, "186," *Qumrân Cave* 4. I (4Q158–4Q186) (DJD 5; Oxford: Clarendon, 1968), 88–91, pl. 31; M. Popović, *Reading the Human Body* (STDJ 67; Leiden: Brill, 2007), 104–118, the text is dated 30 B.C.E–20 C.E, ibid, 28; Böck, "An Esoteric Babylonian Commentary Revisited,"

4QZodiacal Physiognomy is written in Hebrew, the words are written back to front in reverse order from left to right, and some letters are written in paleo-Hebrew, Aramaic square script and Greek; the secret writing leads scholars to believe that the text is of sectarian or Essene origin.[16] In contrast, 4Q318 is regarded as non-sectarian because it is written in Aramaic and the calendar has 360-days unlike the Hebrew calendrical texts found at Qumran which describe schematic 364-day calendars.[17] (This argument is circular, although this paper does not suggest that 4Q318 is aligned to a particular group). The only surviving zodiac sign in 4Q186 — called a "his beast" or "his animal" (root: *beḥemah*, בחמה) in the scroll — is Ox, or Taurus (*Shor*, שור) (4Q186 1 ii 9a, 9b): "In the foot of the Ox. He will be poor and this is [the meaning of] his beast, Taurus."[18]

It is possible that the determination of the person's sign was accompanied by a relevant reference from the Bible. In this case, one could conjecture that Isa 32:20, which contains exactly the same phrase in Hebrew "foot of the ox"[19]and begins with the blessing, אשריכם, *Happy shall you be*, could have been used. Although non-calendrical, *4QZodiacal Physiognomy* is another astrological text in the Dead Sea Scrolls and as such has implications for how astrology was considered by its tradents. Its subject matter, however, is not directly related to 4Q318, which is concerned with the zodiacal position of the moon on a given date and the meaning of thunder on those dates.

THE QUMRAN ZODIAC CALENDAR

The fragments of *4QZodiac Calendar* contain surviving information about the moon's position in the zodiac on particular days of the month throughout a 360-day ideal year. Its 360-day year is divided into 12 months, consisting of 30 days each, a scheme from Mesopotamia known from the third millennium B.C.E.[20]

615–20; Manilius, *Astronomica*. 2.453–65 (Goold, LCL); Albani, "Horoscopes in the Qumran Scrolls," 282–9, 301–15, 317–22, 324–328. J.C. VanderKam, "Mantic Wisdom in the Dead Sea Scrolls," *DSD* 43.3 (1997): 340–3; F. Schmidt, "'Recherche son thème de géniture dans le mystère de ce qui doit être': astrologie and prédestination à Qumran" in *Qoumran et le Judaïsme du Tourant de Notre Ère* (ed. A. Lemaire and S.C. Mimouni. CREJ 40; Leuven: Peeters, 2006), 51–55; J.C. VanderKam, "Mantic Wisdom in the Dead Sea Scrolls," *DSD* 4.3 (1997): 340–3.

[16] Popović, *Reading the Human Body*, 25–28, 237–9.

[17] Greenfield and Sokoloff, "4Q318," DJD 36, 270.

[18] Transliteration, Popović (my translation), *Reading the Human Body*, 29–30, 104–106; Popović, "Physionomic Knowledge in Qumran and Babylonia: Form, Interdisciplinarity and Secrecy," *DSD* 13.2 (2006): 164–5; Popović, "Reading the Human Body and Writing in Code: Physionomic Divination and Astrology in the Dead Sea Scrolls," in *Flores Florentino* (ed. A. Hilhorst et al. SJSJ 122. Leiden: Brill, 2007) 280–3; Albani, "Horoscopes in the Qumran Scrolls," 286–7.

[19] Noted by Albani,"Horoscopes in the Qumran Scrolls," 286 n.29.

[20] R.K. Englund, "Administrative Timekeeping in Ancient Mesopotamia," *JESHO* 31 (1988): 121–85; L.Brack-Bernsen, "The 360-Day Year in Mesopotamia," in *Calendars and Years* (ed. J.M.Steele), 83–100.

The moon takes about 2½ days to traverse one sign; in the scroll it is assigned to two or three days per sign in a highly schematic model. Although the 4Q318 is very fragmentary, at least one occurrence of each sign-name can be found in 4Q318 iv, vii, viii collectively (see the shaded area of Table 1; note that the columns in the graph do not reflect the arrangement of columns in the scroll). The signs represent the schematic position of the moon in the zodiac for a few days towards the end of Elul and the beginning of Tishri (4Q318 iv); the last half of Tevet and all of Shevat (4Q318 vii); and the whole of Adar (4Q318 viii). Hence, in 4Q318 viii, the first sign of the moon, in Adar, is Aries on days 1 and 2 of the month; on days 3 and 4, it is in Taurus and on days 5, 6 and 7, it is in Gemini. This formula of the moon in the same sign for 2 days, then another 2 days, then 3 days is a recurring arrangement throughout the 360-days.

When reconstructed, it may be seen that *4QZodiac Calendar* is related to similar models found in late Babylonian calendrical texts from the 5th to the early 2nd century B.C.E. in which the months and the moon's journey through the zodiac are substituted by numerals instead of month names or sign names.[21]

	Nisan	**Iyyar**	**Sivan**	**Tammuz**	**Av**	**Elul**	**Tishri**	**Heshvan**	**Kislev**	**Tevet**	**Shevat**	**Adar**
1	♉	♊	♋	♌	♍	♎	♏	♐	♑	♒	♓	♈
2	♉	♊	♋	♌	♍	♎	♏	♐	♑	♒	♓	♈
3	♊	♋	♌	♍	♎	♏	♐	♑	♒	♓	♈	♉
4	♊	♋	♌	♍	♎	♏	♐	♑	♒	♓	♈	♉
5	♋	♌	♍	♎	♏	♐	♑	♒	♓	♈	♉	♊
6	♋	♌	♍	♎	♏	♐	♑	♒	♓	♈	♉	♊
7	♋	♌	♍	♎	♏	♐	♑	♒	♓	♈	♉	♊
8	♌	♍	♎	♏	♐	♑	♒	♓	♈	♉	♊	♋
9	♌	♍	♎	♏	♐	♑	♒	♓	♈	♉	♊	♋
10	♍	♎	♏	♐	♑	♒	♓	♈	♉	♊	♋	♌
11	♍	♎	♏	♐	♑	♒	♓	♈	♉	♊	♋	♌
12	♎	♏	♐	♑	♒	♓	♈	♉	♊	♋	♌	♍
13	♎	♏	♐	♑	♒	♓	♈	♉	♊	♋	♌	♍

[21] L. Brack-Bernsen and J.M. Steele, "Babylonian Mathemagics: Two Astronomical-Astrological Texts," in *Studies in the History of the Exact Sciences in Honour of David Pingree* (C. Burnett et al. eds., Leiden: Brill, 2004), 95–121; H.R Jacobus, "4Q318: A Jewish Zodiac Calendar at Qumran?" in *The Dead Sea Scrolls: Texts and Context* (ed. Charlotte Hempel. STDJ 90. Leiden: Brill, 2010), 390–4; H.R Jacobus, "Calendars and Divination in the Dead Sea Scrolls: The Case of 4Q318 Zodiac Calendar and Brontologion," in *Cosmologies* (ed. Nick Campion. Ceredigion, Wales: Sophia Centre Press, 2010), 37–8.

	Nisan	Iyyar	Sivan	Tammuz	Av	Elul	Tishri	Heshvan	Kislev	Tevet	Shevat	Adar
14	♎	♏	♐	♑	♒	♓	♈	♉	♊	♋	♌	♍
15	♏	♐	♑	♒	♓	♈	♉	♊	♋	♌	♍	♎
16	♏	♐	♑	♒	♓	♈	♉	♊	♋	♌	♍	♎
17	♐	♑	♒	♓	♈	♉	♊	♋	♌	♍	♎	♏
18	♐	♑	♒	♓	♈	♉	♊	♋	♌	♍	♎	♏
19	♑	♒	♓	♈	♉	♊	♋	♌	♍	♎	♏	♐
20	♑	♒	♓	♈	♉	♊	♋	♌	♍	♎	♏	♐
21	♑	♒	♓	♈	♉	♊	♋	♌	♍	♎	♏	♐
22	♒	♓	♈	♉	♊	♋	♌	♍	♎	♏	♐	♑
23	♒	♓	♈	♉	♊	♋	♌	♍	♎	♏	♐	♑
24	♓	♈	♉	♊	♋	♌	♍	♎	♏	♐	♑	♒
25	♓	♈	♉	♊	♋	♌	♍	♎	♏	♐	♑	♒
26	♈	♉	♊	♋	♌	♍	♎	♏	♐	♑	♒	♓
27	♈	♉	♊	♋	♌	♍	♎	♏	♐	♑	♒	♓
28	♈	♉	♊	♋	♌	♍	♎	♏	♐	♑	♒	♓
29	♉	♊	♋	♌	♍	♎	♏	♐	♑	♒	♓	♈
30	♉	♊	♋	♌	♍	♎	♏	♐	♑	♒	♓	♈

Key: ♈ Aries; ♉ Taurus; ♊ Gemini; ♋ Cancer; ♌ Leo; ♍ Virgo; ♎ Libra; ♏ Scorpio; ♐ Sagittarius; ♑ Capricorn; ♒ Aquarius; ♓ Pisces

Table 1: 4QZodiac Calendar. The zodiac signs represent the position of the moon in the zodiac in the schematic year; the extant days in the calendar are shaded

THE ZODIAC SIGN NAMES

In order to research the cultural origins of the Qumran zodiac it is useful to review some of the variant names in Greek and Mesopotamian sources.

The zodiac signs, in the order in which they appear in *4QZodiac Calendar* (from 1 Nisan, reconstructed)[22] as follows: תורא, The Ox;[23] תאומיא, The Twins;[24] סרטנא The Crab;[25] אריא, The Lion;[26] בתולתא, The Maiden;[27] מוזניא,

[22] See Jacobus, "A Jewish Zodiac Calendar at Qumran?" Fig.1. 373, or Jacobus, "Calendars and Divination in the Dead Sea Scrolls," Table 1, 39.

[23] 4Q318 vii 5, viii 1; this sign name is also extant in 4Q186 1 ii 8 (Popović, *Reading the Human Body*, 28–29), the only other zodiac sign in the Dead Sea Scrolls outside of 4Q318.

[24] 4Q318 viii 9.

[25] 4Q318 vii 1, 6, viii 2.

[26] 4Q318 vii 1, 6, viii 2.

[27] 4Q318 vii 2, viii 3.

The Balance;[28] עקרבא, The Scorpion;[29] קשתא, The Bow or The Archer;[30] גדיא, The Kid-Goat;[31] דולא The Bucket;[32] נוניא, The Fishes;[33] דכרא, The Ram.[34]

As Greenfield showed in his seminal study on the etymology of the sign names, the Qumran zodiac is not entirely the same as the Greek, Akkadian, Hebrew, or the Eastern Aramaic Mandaic and Syriac zodiacs.[35] He suggested that Aramaic played an intermediary role in the transmission of the zodiac sign names, and he hypothesised that a Greek scholar within the Achaemenid court, or scholarly contacts in the coastal cities of Asia Minor, enabled the dissemination process.[36] This cosmopolitan theory may account for the mixture of cultural traditions in the Qumran zodiac, but it does not entirely explain the variant sign names, as shall be discussed.

Historically, the zodiac itself, as opposed to the zodiacal constellations, which are older, is attested in the 5th century in astronomical diaries and horoscopes from Mesopotamia.[37] It appeared in Greece in the zodiacal calendar of Euctemon (fl. 432 B.C.E.), Meton (fl. 432 B.C.E.), and Eudoxus (c.390 B.C.E.–340 B.C.E.).[38] As demonstrated below, the Babylonian and classical Greek cultures retained their own zodiac sign names, some of which overlapped while other names reflected different symbolic motifs. Over time, some sign names were exchanged in both directions. There may be traces of this swapping and replacement process in the Qumran zodiac before the Hebrew and Eastern Aramaic zodiacs became fixed, as shall be discussed. Furthermore, the sign names may place particular cultural interpretations on visual representations of the signs from Greece and the ancient Near East that are not reflected in the etymology. There is no visual imagery in the Qumran zodiac (or in any of the Dead Sea Scrolls); in contrast, zodiacs before and contemporary with 4Q318 are rich in iconography and literary *topoi*.

4QZodiac Calendar has the earliest attested variant zodiac sign-names for Capricorn and Aquarius, which differ from both the Akkadian and Greek versions;

[28] 4Q318 vii 2, 7.
[29] 4Q318 vii 2, 7.
[30] 4Q318 vii 3, 8, viii 4.
[31] 4Q318 iv 9, 8, viii 4.
[32] 4Q318 vii 4, 9, viii 5.
[33] 4Q318 vii 4, 9, viii 5.
[34] 4Q318 viii 1, 6.
[35] J.C. Greenfield, "The Names of the Zodiacal Signs in Aramaic and Hebrew," in *Au Carrefour des Religions* (RO 7; ed. R. Gyselen; Bures-sur-Yvette: GPECMO, 1995): 95–103.
[36] Greenfield, "The Names," 96. (It is unclear whether the scholarly contacts in Asia Minor are those of the Greek scholar, or another hypothetical process).
[37] Rochberg, *Heavenly Writing*, 130 n. 27, 28, 29; Sachs, "Babylonian Horoscopes," 54–55; B.L. van der Waerden, "History of the Zodiac," *AfO* 16: 216–230.
[38] A. Bowen and B. R. Goldstein,"Meton of Athens and Astronomy in the Late Fifth Century B.C," in *A Scientific Humanist,* eds. Erle Leichty et al, Philadelphia: OPSNKF 9, 1988, 39–81; Neugebauer, *HAMA*, 628–9.

these same variants first attested at Qumran appear in later Hebrew, Syriac and Mandaic sources. Later Syriac, Mandaic and Arabic texts also have different sign names for Virgo, Sagittarius, Gemini and Pisces[39] that are unattested in Hebrew, or in 4Q318. Some sign-names in 4Q318 of particular interest shall now be considered; taken together these raise particular contextual questions about the Qumran zodiac among the other zodiacs in the ancient Near East in the same period.

Aries is the only zodiac sign that was not directly translated from the Qumran zodiac to the Hebrew zodiac in that it was represented by The Lamb. In *4QZodiac Calendar*, Aries is The Ram, דכרא,[40] *Dikra*, as it is the Greek zodiac, Κριός, Ram. The Hebrew Lamb, טלה, *Taleh*, is attested in the Palestinian zodiac synagogue mosaics[41]and in the Mandaic zodiac.[42] The Mesopotamian name for the sign is the Hired Man, HUN.GA (Akkadian: Agru).[43] The image of a Ram is found in mid 2nd century B.C.E. Mesopotamian seal stones.[44] Sachs notes that the sign mul-LU or múl-LU, or LU, "meaning 'Aries'" ["Hired man"[45]] appears in more than a dozen Seleucid texts;[46] however, there are no known images of a Hired Man, or a Lamb, on the incised seals. Van der Waerden and Wallenfels observed that The Ram replaced the Hired Man in the late Mesopotamian tradition.[47] All the other signs in the Hebrew zodiac are equivalent to direct translations of the Aramaic zodiac in 4Q318.

The sign for Virgo in *4QZodiac Calendar* is *Bethulta*, The Virgin, בתולתא,[48] a direct translation of the Hellenistic name for *Parthénos*, Παρθένος. Greenfield

[39] P. Gignoux, "Les noms des signes du Zodiaque en syriaque et leurs correspondants en moyen-perse et mandéen," *Mélange Antoine Guillaumont* (eds. R.G. Coqin, et al, Geneva: Patrick Cramer), 1988, 200–304; I thank Dr Christa Müller-Kessler for her talk and handouts related to the Mandaic zodiac and Mr Nicholas al-Jeloo for his paper related to the Syriac zodiac, presented at the ARAM Society 29th international conference on, "Astrology in the Ancient Near East," Oriental Institute, Oxford, 8–10 July 2010; see also Roland Laffitte, "Les noms des signes du zodiaque dans l'espace arab-turco-persan et méditerranean." *Bulletin de la Selefa* 7 (2006): 1–12. Cited July 15, 2010. Online: http:// www.selefa. Assoc.fr/files_pdf/Instit07_T8.pdf

[40] 4Q318 vii 5, viii 1, 6, see Greenfield and Sokoloff, DJD 36, 262–3, pl.15.

[41] R. Hachili, *Ancient Mosaic Pavements*, 40–41 (pl. III.7a; fig. III–6); טלה is clear in all the synagogue mosaics, except Huseifa, where no names are extant.

[42] Greenfield ,"The Names," 98.

[43] Hunger and Pingree, *MUL.APIN*, 69, 138; J. Gray, A Study of Babylonian Goal-Year Planetary Astronomy," Ph.D thesis, Durham, 2009, 22, Table 1.5

[44] Wallenfels, "Zodiacal Signs," 282–3, see no.1, fig. 1; van der Waerden, "History of the Zodiac," 226.

[45] Hunger and Pingree, *MUL. APIN*, for example, 50 (Tablet 1 iii 24); L. Bobrova and A. Militarev, "From Mesopotamia to Greece: to the Origin of Semitic and Greek Star Names," in *Die Rolle der Astronomie in den Kulturen Mesopotamien*s (ed. Hannes D. Galter. GMS 3; Graz: tm-Druck, 1993), 321.

[46] A. Sachs, "Babylonian Horoscopes," *JCS* 6 (1952): 71 n.51.

[47] Wallenfels, "Zodiacal Signs," 282–3; van der Waerden, "History of the Zodiac," 226; Greenfield, "The Names," 98.

[48] 4Q318 vii 2, viii 3, see Greenfield and Sokoloff, DJD 36, 262–3, pl. 15.

comments that in many ways this is the "most interesting of the zodiacal names" at Qumran, and that it is the only "concrete sign of Western influence among the zodiacal names in the Jewish tradition."[49] Neither the Greco-Roman tradition nor the Qumran or Hebrew zodiacs adopted the Mesopotamian name for this sign, Barleystalk (^{mul} AB.sín).[50] The ear of corn represents Spica, the fixed star that the Virgin appears to hold in the constellation of Virgo (α Virginis).[51] If the sign name in *4QZodiac Calendar* had been subject to Babylonian influences, we could expect the zodiacal name to be The Ear of Corn, שבלתא, *Shavalta*, as it is in a corresponding form in the Eastern tradition.[52] Interestingly, the Hebrew name for Spica is שבלתא, *Shibbolet*, an Ear of Corn, as it is, correspondingly, in other Semitic languages.[53]

The sign may be represented by Ishtar holding a long weapon and a bunch of dates in a 3rd millennium B.C.E. Babylonian wax impression.[54] In the astrological tablet AO 6448 (Paris), from early second century B.C.E. Uruk, a young woman, facing left, carries an ear of corn in her right hand.[55] Her ankle-length skirt is drawn in at the waist; the hem and skirt have a detailed pattern. This is possibly the first example of iconic Greek influence for this sign in Mesopotamia,[56] and may indicate a change of sign name. Van der Waerden does not agree that this particular image stems from Greek influence, but he concurs that the Greek name of Virgo may not have a Babylonian source and that the representation of an ear of grain is of Mesopotamian origin.[57]

Similar imagery of a female figure holding an oversized spike of grain, representing Spica, is found for a graphic representation of Virgo on a seal from Seleucid Uruk dated to 217 B.C.E.[58] The impression on the gem apparently

[49] Greenfield, "The Names," 99–100.

[50] van der Waerden, "History of the Zodiac," at 226; Hunger and Pingree, MUL.APIN (Tablet I ii 10; iv 35): 33, 68, 138–41; Greenfield, "The Names," 99; Bobrova and Militarev, "From Mesopotamia to Greece," 314; Gray, *Goal-Year Planetary Astronomy*, 22, Table 1.5.

[51] Greenfield, "The Names," 99–100; Aratus, *Phaenomena*, line 97 (lines 96–8). Translated by D. Kidd, *Aratus: Phaenomena* (Cambridge, CUP, 1997), pp. 79–81, commentary, pp. 215–6; Ptolemy, *Tetrabiblos* (Robbins, LCL), 51 n. 5. Manilius, *Astronomica* 5. 270–292 (Goold, LCL), 322–325; Laffitte, "Les noms," 8–9. *Geminos's Introduction to the Phenomena* II.6, translated by Evans and Berggren (Princeton: Princeton University Press, 2006), 137–8, n. 6; Greenfield and Sokoloff, DJD 36, 267–9 (at 268). So in Syriac and Mandaic.

[52] Greenfield and Sokoloff, DJD 36, 267–9 (at 268); Greenfield, "The Names," 99–100.

[53] Bobrova and Militarev, "From Mesopotamia to Greece," 314; Greenfield, "4Q318," DJD 36, 268.

[54] J. H. Rogers, "Origins of the Ancient Constellations: I: The Mesopotamian Traditions," *JBAA* 108.1 (1998): 9–28 (11, fig. 2, 26).

[55] E. Weidner, *Gestirn Darstellungen*, 9–11, 29–34, pl. 10.

[56] R. Caplice, review of E. Weidner, Gestirn Darstellungen, *Or* 38 (1969), 580–2 (at 581–2).

[57] van der Waerden, "History of the Zodiac," 226.

[58] R. Wallenfels, "Zodiacal Signs among the Seal Impressions from Hellenistic Uruk," in *The Tablet and the Scroll* (ed., M.E. Cohen et al. Bethesda: CDL Press, 1993), 281–9 (285, no. 6, fig. 8).

portrays a standing woman facing left, dressed in an indistinct garment, without a headdress, holding the large ear of wheat in her right hand. The Mesopotamian artists' representations of the sign-name may have played a determining role in the literary transmission, from Sheaf of Grain in the ancient Near East, to *Parthénos* in Greece, and thence to *Bethulatha* at Qumran.[59] Laffitte argues that due to the Hellenistic influence this Qumran zodiac name should be classified as Western Aramaic.[60] The pictorial representation of the Hebrew Virgo, בתולה, *Bethulah*, in early Byzantine Palestinian synagogue mosaics appears as a woman both with and without an ear of grain,[61] possibly reflecting both the Western (Hellenistic) and Eastern (Babylonian, Hebrew) traditions, although, as stated, similar female representations exist from the 3rd millennium, possibly of Ishtar.

The sign of Libra, the Scales, or the Balance in *4QZodiac Calendar*, מוזניא,[62] *Moznayya*, is a name of Babylonian origin that was adopted by the Greeks:[63] Ζυγός, *Zygos*, eventually replacing their name for Libra, the Claws Χηελαι, Chelai (of the Scorpion).[64] The Sumerian tradition also knows The Scales, ZI.BA.AN.NA,[65] The Beam or Balance of a scale[66] (Babylonian: RÍN[67]). The sign name, ΧΗΕΛΑΙ, the Claws of the Scorpion, is inscribed in the world's

[59] Greenfield, "The Names," 100.

[60] Laffitte, "Les noms," 8–9.

[61] At Sepphoris, only two ears of wheat and a star (all extant zodiac signs in this roundel have stars) remain; at Hammath Tiberias Virgo is an elaborately fully-clothed woman wearing a veil at the back of head, tunic, robe and jewellery, holding a torch in her right hand; at Na'aran, Virgo holds a plant; and at Beth Alpha, Virgo is a bejewelled, decoratively attired Byzantine princess on a throne. See Hachili, *Ancient Mosaic Pavements*, pl. III. 8c; fig. III–7, 42.

[62] 4Q318 vii 2, 7, viii 3, see Greenfield and Sokoloff, DJD 36, 272–3, pl.15. It is spelt with a *vav* at Qumran. In Hebrew it is spelt with an *aleph*: מאוניא. At Hammath Tiberias, Sepphoris and Na'aran, *Moznayim* is spelt with a *vav*. At Beth Alpha it is spelt with an *aleph* (the sign is not extant at Huseifa), see Hachili, *Ancient Mosaic Pavements*, 42.

[63] Evans and Berggren, *Geminos's Introduction*, 117 n.12.

[64] The so-called Geminos Parapegma (dated shortly after 200 B.C.E.) uses the Balance or the Scales Ζυγὸς, D. Lehoux, *Astronomy, Weather and Calendars in the Ancient World* (Cambridge, Cambridge University Press, 2007), 227; Geminos (fl. 150 B.C.E) refers to the Balance and attributes the Claws to "the ancients," *Geminos's Introduction*, Evans and Berggren, 117, n. 12 (vii 25); Manilius uses both "Libra," and "Chelae" the Balance and Claws, see use of both in one verse: *Astronomica* 4.547–8 (LCL, Goold).

Zugós (ζυγός) is attested in the zodiacal sundials (S.L. Gibbs, *Greek and Roman Sundials*, New Haven: Yale University Press), 86; Philo uses the Balance, see Philo, *Creation*. 39:116 (Colson and Whitaker, LCL); Ptolemy (fl.c. 150 C.E.) uses both sign names in the *Tetrabiblos* (Robbins, LCL, 51 n. 2): but in the *Almagest* he uses The Claws in the text, the Balance in his headings, except once in the text (*Almagest* ix 7) with reference to a "Chaldean" observation, *Geminos's Introduction,* Evans and Berggren, 117, n. 12.

[65] Hunger and Pingree, *MUL.APIN*, 138, 162; van der Waerden, states that the scorpion's horn is used as a synonym for the Balance in MUL.APIN, in idem, *History of the Zodiac*, 226.

[66] Wallenfels, "Zodiacal Signs," 285; Greenfield, "The Names," 100.

[67] Gray, *Goal-Year Planetary Astronomy*, 22, Table 1.5.

oldest known geared machine, the Greek Antikythera Mechanism,[68] dated variously to circa 150 B.C.E and 80 B.C.[69]

Kidd agrees that the Balance entered the Greek zodiac only after Hipparchus (c.190–c.120),[70] but Goold dates the adoption of *Zygós* and *Libra,* the Latin equivalent, into Hellenistic astronomy and the Greco-Roman literary world to no earlier than the 1st century C.E.[71] If so, and The Scales in 4Q318 was originally imported through later Hellenistic influences, it may mean that the origin of The Balance at Qumran may be not dated before the beginning of the 1st century C.E.

On the other hand, if the Qumran Libra came from Mesopotamia, the origin of this sign name in the Dead Sea Scrolls could have been earlier. In all the extant Hebrew synagogue mosaics, Libra, the Balance, *Moznayim*, is depicted as a human figure holding a pair of scales. At Hammath Tiberias, the earliest extant pictorial Hebrew zodiac mosaic, the figure is naked and holds a sceptre as well as scales.[72]

Sagittarius, The Archer, or The Bow, קשתא, *Qashta*, or *Qeshta*, respectively, in 4Q318 is ambiguous, its meaning depending upon the consonants.[73] The name in Sumerian, likewise, may mean the Archer or Bow: PA.BIL.SAG,[74] and in Babylonian, PA.[75] It is the Archer in Greek (Τοχότης). The sign is visually depicted as a centaur-archer on boundary stones and seal impressions.[76]

[68] Price *Gears from the Greeks* (TAPS 64:7; Philadelphia: APS, 1974), 17–18; R. Hannah, *Time in Antiquity*, London: Routledge, 2008, 48–9. ref: to Hewlett Packard site containing publically available images: http://www. hpl.hp.com/research/ptm/antikythera_mechanism/full_resolution_ptm.htm. (image no. AK31a). Cited 31 October 2009, or the link via the team's website: http://www.antikythera-mechanism.gr/

[69] Price, *Gears from the Greeks,* 1–70; Freeth et al. "Calendars with Olympiad Display and eclipse prediction on the Antikythera Mechanism," *Nature* 454 (31 July 2008): 614–7; Freeth et al. "Decoding the ancient Greek astronomical calculator known as the Antikythera Mechanism," *Nature* 444 (Nov 2006): 587–591; M.T. Wright, "The Antikythera Mechanism reconsidered." *ISR* 32:1 (2007), 27–43.

[70] Aratus (fl. third century B.C.E) uses *chēlai*, see Kidd, commentary on Aratus, *Phaenomena*, 211–13, the first appearance of the Balance may have been in Hipparchus's commentary on Aratus (3.3.4), see Kidd, 211; cf. *Geminos's Introduction to the Phenomena*, Evans and Berggren, 117, n. 12: they date the Commentary to c.160 BCE and state that the Claws are used throughout, a Balance, once (*Phen*. iii 1.5). They also state that Eratosthenēs (*Catasterisms*, c.230 B.C.E.) always refers to The Claws.

[71] Goold states that *Zugós and Libra* are not found before 1st century B.C.E ("first in Geminos"), Manilius, *Astronomica* (LCL, Goold), Introduction, xxv.

[72] Hachili, *Ancient Mosaic Pavements*, 42, pl.III.9a; fig. III-8.

[73] Greenfield, "The Names," 100.

[74] Greenfield, "The Names," 100; Hunger and Pingree, MUL. APIN, 138, 160; Wallenfels, "Zodiacal Signs" 286, no. 9, fig. 12, seal impression dated from 230 B.C.E, Babylonian star catalogue (BM 78161) from c. 5th–7th centuries; Rogers, "Origins. I," 26–27; van der Waerden, "History of the Zodiac," 226.

[75] Gray, *Goal-Year Planetary Astronomy*, 22, Table 1.5.

[76] van der Waerden, *History of the Zodiac*, 226–7, fig 4; Wallenfels, "Zodiacal Signs," 286 no. 9, fig 12, 287–288, fig 16, 17.

The image of the Sagittarian centaur-archer is also known in the Graeco-Roman literary tradition and is described as such by Manilius and Ptolemy.[77] Aratus (fl. early 3rd century B.C.E.) writes of the Archer drawing his bow, without being part animal; the Centaur being a separate constellation.[78]

The representation of Sagittarius in the Hebrew synagogue mosaic traditions are mixed: *Qashat* is represented by a centaur-archer in the Sepphoris zodiac;[79] at Huseifa and Beth Alpha, it is symbolised by a human archer; at Huseifa, he is naked.[80] The Qumran Sagittarius may be a literal translation of the name from either the Babylonian or Greek. The visual and literary representations of the sign as a centaur-archer may have an accompanying oral tradition and can be considered separately. Although the Babylonian and Greco-Roman imagery contravenes Lev 19:19 prohibiting the mixing of species, there is nothing in the sign-name itself to denote a centaur. The Mandaic translation of Sagittarius, *hitia*, means "arrows,"[81]which may reflect the tradition of the bow, not the centaur.

The Qumran sign name of Capricorn, גדיא, The Kid (a young goat), *Gadya,* is in contrast to both the Babylonian and Hellenistic traditions in which the sign-name is the Goat-fish: Babylonian, MÁŠ,[82] Gk: ʾΑιγόκερως, *'aigokerós* (Akk: suhurmašû),[83] The Aramaic dialects also know *Gadyā*, The Kid Goat, and Hebrew has the exact equivalent: *Gedi*.[84] The sign is visually represented by a goat-fish in the 4th century synagogue mosaic of Hammath Tiberias, and by a goat in the Beit Alpha zodiac wheel.[85] *4QZodiac Calendar* contains the first attestation in an ancient primary source of the variant sign-name *Gadya*. The possibility may be considered that the young goat is a Judaised version of the sign-name because a pagan sea-goat, an amalgam of two separate species, would be regarded as abominable in biblical law.[86]

[77] Manilus, *Astronomica*. 1.270 (Goold, LCL); Ptolemy, *Tetrabiblos*. 1.27 (Robbins, LCL) 50–51 n. 3. The centaur is known from boundary stones, van der Waerden, *History of the Zodiac*, 226–7, fig 4.

[78] Aratus, *Phenomena*, 300–310 (Kidd, 94-95).

[79] Wadeson, "Chariots," fig. 4b, p.29). B. Kühnel: "The Synagogue Floor Mosaic in Sepphoris," in *From Dura to Sepphoris*. (ed., L. Levine and Z. Weiss. JRA 40: Portsmouth, RI, 2000), 31–43 (33, 36–9); Hachili, *Ancient Mosaic Pavements*, 42–3, fig. III–8; fig. III-3.

[80] Hachili, *Ancient Mosaic Pavements*, 42–3, pl. III.9; fig. III-8.

[81] Greenfield, "The Names," 100; J. Greenfield and J. Naveh, "A Mandaic lead roll with four incantations," *Eretz Israel* 18 (1985), 97–106 [Hebrew], cited in handout by C. Müller-Kessler, "Mandaic signs of the zodiac and related sources," at the 29th ARAM conference, "Astrology in the Ancient Near East," Oxford, 8–10 July 2010.

[82] Gray, *Goal-Year Planetary Astronomy*, 22, Table 1.5.

[83] Greenfield, "The Names," 100–101; Wallenfels, "Zodiacal Signs" 285, fig. 9, dated to the first half of the 2nd century B.C.E and , 286, no. 10, fig. 13, dated to 281 B.C.E; van der Waerden, "History of the Zodiac," 226; Manilius, *Astronomica* 2.167–180 (LCL, Goold); Ptolemy, *Tetrabiblos*, 53, n.1, 173, 205, (LCL, Robbins).

[84] Greenfield, "The Names", 100–101.

[85] Hachili, *Ancient Mosaic Pavements*, 43–44 (pl. III. 10a; fig III-9).

[86] Lev 19:19. The image goat-fish is found in the synagogue zodiac of Hammat Tiberias however it is not used at Beth Alpha. (Summary of images: L. Wadeson, "Chariots of Fire," ARAM 20

Aquarius, דולא, The Bucket, *Dola*, is also unattested in either the Babylonian and Hellenistic zodiacal traditions. The Qumran sign name is neither an Aramaic translation of the Greek ‘Υδροχόος, Water-pourer, *‘Udrokhóos*, nor the Akkadian GU.LA, “Great One,”[87] (Babylonian, GU)[88] who may have originally represented the god, Ea.[89] This name may also contravene the biblical precept and first Commandment that there should be no other gods: Exod 20:3 and Deut 5:7.

Similar translations to The Bucket for Aquarius are also found in Syriac and Mandaic;[90] the reception history of דולא is Semitic, adopted into Middle Persian, and Hebrew, as attested in the Hebrew synagogue zodiac mosaics.[91] The visual representation of a Bucket, דלי, *Deli,* in the Byzantine Hebrew synagogue mosaics varies from the classical representation of a naked, Greco-Roman figure pouring water backwards from an urn which he carries on his shoulder (Hammath Tiberias), to a more literal visual rendering of the sign-name (Beit Alpha, Huseifa and possibly Sepphoris).[92]

The Bucket in 4Q318 removes the water pourer and focuses on a receptacle. In Greek imagery, the Water Pourer may have one urn;[93] in 2nd millennium B.C.E Mesopotamian wax cylinder seals, Ea carries two vessels flowing with water and has fish at his shoulders.[94] In later iconography, he has two streams running over his shoulders that terminate in two urns; the two streams emanate from a third vessel that he holds at his chest.[95] In removing the water element and the person who pours water, The Bucket also changes the astronomical basis of the Greek sign name, which reflects the sign’s connection with the constellation of Pisces.[96] The Qumran Bucket without its water pourer did not travel west.

I have viewed the zodiac sign names of 4Q318 from a broad etymological perspective to draw together a picture of the cultural and chronological context

(2008): 1–41 (pl. 6, p.31). S. Fine, *Art and Judaism in the Greco-Roman World* (Cambridge: CUP, 2005), 196–205.

[87] Hunger and Pingree, *MUL.APIN*, 68 (Tablet I iv 36), 12, 144.

[88] Gray, *Babylonian Goal-Year Planetary Astronomy*, 22, Table 1.5.

[89] Edith Porada, “On the Origins of Aquarius,” in Language*, Literature and History* (ed. Francesca Rochberg-Halton; AOS 67. New Haven, Connecticut, 1989), 279–91, Rogers, “Origins I,” 11, 17, 19, 21, 27.

[90] Greenfield, “The Names,” 101.

[91] Greenfield, DJD 36, 268.

[92] The Beth Alpha mosaic depicts a woman with a Roman hairstyle lowering a bucket into a well; at Huseifa an amphora with flowing water is represented, and at Sepphoris only stylised falling water survives, see Hachili, *Ancient Synagogue Mosaics*, 43–4, pl. III.10b; fig. III-9.

[93] Manilius, *Astronomica* 1.272 (LCL, Goold). In Aratus, the number of urns is not given, *Phaenomena*, (CUP, Kidd), 390.

[94] Porada, “On the Origins of Aquarius,” figs 1, 3, 12, 13, 14, 15, 16, 17; Rogers, “Origins I,” (figs 2, 5).

[95] Wallenfels, “Zodiacal signs,” 286–7, fig. 14.

[96] Rogers, “Origins I,” 27; Aratus, *Phaenomena* 385–390, Kidd, Commentary: pp. 323–4; Manilius, *Astronomica* 1.272, 1.438–442 (Goold, LCL).

of the zodiac at Qumran. *4QZodiac Calendar* contains two previously unknown zodiac sign names and a mixture of well-attested Mesopotamian and Hellenistic names, Capricorn and Aquarius. The new name for Capricorn, The Kid, does not contravene the biblical law, Lev.19.19, the prohibition on mixing species, whereas in both the Babylonian and Hellenistic zodiacs, Capricorn is represented by the goat-fish, visually, a goat with a fish-tail. Etymologically, this symbolism may have been unacceptable within Second Temple Judean society. The Kid is distantly related to the image of the goat-fish that it replaces while still preserving a trace of the sign's Babylonian and Hellenistic origins. According to Bobrova and Militarev the Sumerian and Akkadian goat-fish was a carp-fish that evolved through etymological processes into a goat-fish, and hence the image of a goat with a fish-tail on boundary stones.[97]

The Hellenistic concept of the next sign, the Water Pourer, does not infringe biblical law, but its Mesopotamian sign name of GU.LA may contravene the first commandment. Moreover, it is probably too culturally specific to have been translated into Aramaic and transplanted in the Dead Sea Scrolls. Whatever the reason for the variant sign names at Qumran, their existence may show that the authors of the 4Q318 zodiac were not averse to revising zodiacal names, possibly for their own cultural reasons. This tradition may have continued, as shown by the change of the name of Aries from The Ram in *4QZodiac Calendar*, to the adoption of a Lamb, attested in the early Byzantine Hebrew zodiac mosaics. Here again, the imagery, not the etymology, is loosely related but distinctively different.

Aside from Virgo, the Qumran zodiac names may have had a Babylonian origin. However, the image of a woman holding a corn spike existed in seals from Seleucid Mesopotamia. If the name of the Virgin was adopted there, Hellenistic Babylonia may be a possible locus of origin of the zodiac sign-names in *4QZodiac Calendar*. If the Qumran zodiac, as a whole, was of Hellenistic Greek, rather than Hellenistic Mesopotamian origin, that is, Babylonia under the Seleucids, it could not be earlier than the late second century B.C.E. when The Balance, the Babylonian zodiac name, first appeared in the Geminos Parapegma.

If Qumran sign names were a translation from a purely Hellenistic zodiac that was in widespread use, 4Q318 would be more likely to date from the early 1st century C.E., when The Balance was more commonly used in Greco-Roman writing. Hence, if the *4QZodiac Calendar* originated from the Hellenistic world, its composition would correlate approximately with the date of the scroll itself. On the other hand, if a Seleucid Mesopotamian background were considered, the date of the original Qumran zodiac need not be determined by the period when the Mesopotamian Balance replaced the Hellenistic Claws. In that case,

[97] Bobrova and Militarev, "From Mesopotamia to Greece," 322.

the origin of the Qumran zodiac could be some 200 years earlier to the period of the images on AO 6448, and the seal stones, *if* the incised representations reflected the sign name of the Virgin (and since the female figure carries a corn spike, this is a matter of speculative interpretation).

The Egyptian zodiacs, including two from the temple of Dendera that are dated to 30 B.C.E., and the reign of Tiberius in the early first century C.E.,[98] also depict the Balance, not the Claws.[99] All the Egyptian zodiacs date from the Ptolemaic period.[100] The iconography is "undoubtedly Babylonian in origin" as attested by the representations of the goat-fish (Capricorn), a double or single-headed archer on a scorpion-tailed horse, usually winged (Sagittarius), and the most common representation of woman holding an ear of corn (Virgo).[101] The Scales may also have been compatible with existing sacred and vernacular Egyptian iconography.[102] In addition to being represented by the scales or a balance held by a figure, "'Libra,' the only named sign," is also reflected by the word for "horizon," a sun disk, or a Horus-child baboon, related to the word for "horizon."[103]

Aquarius has many variations as a water pourer in the Egyptian zodiacs: the figure may be standing or seated, or pouring water from one, or two, vessels. In some instances, the sign is depicted by a papyrus plant, and no vessels or water are shown at all. Aquarius may also be represented by the Nile god, Hapy, wearing a papyrus crown.[104] Although Egypt may be considered as a possible place of transmission for the zodiac in the Dead Sea Scrolls, these graphic representations might make a direct connection with the names of the zodiac signs in 4Q318 unlikely.

In sum, by taking a comparative, diachronic approach it was found that the Qumran zodiac contains both late Hellenistic and late Babylonian features, reflecting a mixture of cultural influences. These could be accounted for by: (1) a process of composition in Hellenistic Seleucid Mesopotamia, which was

[98] O. Neugebauer and R.A. Parker, *Egyptian Astronomical Texts III* (Providence: Brown, 1969), [abbrev. EAT], Esna A, 200 B.C.E., now destroyed, 168, Dendera B, before 30 B.C.E., pl. 35; Shanhûr, 30 B.C–27 C.E, pl. 40; Dendera E, 20 C.E., pl. 42; Tester, *A History of Western Astrology*, " 20; N. Campion, *A History of Western Astrology*. Vol.1. Continuum (2008), 182–3.

[99] Neugebauer and Parker, EAT III, 210, 218, fig 33-A.

[100] Neugebauer and Parker, EAT III, 4.

[101] Neugebauer and Parker, EAT III, 168, 203, 209–11.

[102] See images from the weighing of the heart ceremony in Book of the Dead of Hunefer (19th Dynasty, c.1280 B.C.E, Chapter 25: painted papyrus, British Museum catalogue no. EA9901, Sheet 3), in I. Shaw and P. Nicolson, *British Museum Dictionary of Ancient Egypt* (London: British Museum Press, 1995), 30; M. Gutgesell, "Economy and Trade," in *Egypt: The World of the Pharaohs* (ed. R. Schulz and M. Seidel. Cologne: Könemann, 1998), 373, pl. 74: Weighing of gold and silver, tomb c.1380 B.C.E, 374, pl. 75, The Treasury of Pharaoh, tomb c.1250 B.C.E.

[103] Neugebauer and Parker, EAT III, 132, 210, 218.

[104] Neugebauer and Parker, EAT III, 211–12; van der Waerden, "History of the Zodiac," 229, figs. 5, 7, 9.

a locus of astronomical scribal activity; (2) a late Hellenistic influence in the early 1st century (the very latest date for the scroll); or, less satisfactorily (3) by Greenfield's hypotheses of transmission by a Greek scholar in the Persian court. By the early first century C.E. in Judea, cultural influences were undoubtedly intertwined; if *4QZodiac Calendar* were composed or translated into Aramaic at this time rather than copied from an earlier tradition, the question of Hellenistic influence could be considered. The third possible influence in the mix may be Judean itself, as I shall now briefly discuss.

The Aramaic zodiac at Qumran is unique not only because the Hebrew zodiac has an Aries Lamb, but some of the closest Eastern Aramaic zodiacs, which share the Qumran Aries Ram, eschew the name of the Virgin, in preference for her spike of corn. The variant Qumran zodiac sign names, the earliest attested, do not contravene biblical law, in contrast to the equivalent sign names in Mesopotamian and Greco-Roman traditions. Therefore, in their specific context — the Dead Sea Scrolls, an archive containing biblical manuscripts and commentaries on biblical law — the variant sign names may be more acceptable than non-variant versions. This does not mean that the scroll would be sectarian or Essene, since biblical law was not exclusive knowledge.

The process of etymological evolution or an expedient translation into Aramaic into simpler sign-names may also be considered as a reason for the name changes. However, the fact remains that only Bucket and Kid, not Aquarius and Capricorn, were found in the Byzantine Hebrew synagogue zodiac mosaics and those sign-names are still extant in the Hebrew zodiac, which may support the argument that the etymology was acceptable.

This paper indicates that the socio-cultural background of the transmission process of the zodiac in the ancient Near East has yet to be explored. Aside from the question of the variant Kid and Bucket in the Dead Sea Scrolls, it would be intriguing to research why the Hellenistic, Qumran-Aramaic and Hebrew Virgo, the Virgin, does not appear in the eastern Aramaic zodiacs, and the Mandaic Aries, the Lamb, is the first sign of the Hebrew zodiac, rather than the Ram of *4QZodiac Calendar*.

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