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**PHILIPPE GUILLAUME, TRACING THE ORIGIN OF
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TRACING THE ORIGIN OF THE SABBATICAL CALENDAR IN THE PRIESTLY NARRATIVE (GENESIS 1 TO JOSHUA 5)

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1. INTRODUCTION

The Old Testament is replete with dates¹, and its readers have calculated the date of many biblical events, even the date of the creation of the world². This has led theologians to exalt the biblical commitment to historical time against mythological cycles, and the/a “history of salvation” against mythological nature religions. Of course this is folly; time reckoning does not turn mythology into historical reports. The biblical chronological data (at least in the Torah) have a different *raison d'être*. They are highly symbolic and are meant to be read so. However, it is difficult to make sense of these numbers, due to the sheer amount of data and to several complicating factors. The writing of biblical texts from beginning to their final, canonized form is spread over ten centuries. During this time, groups with diverging theologies and political agendas introduced competing calendars. They left us with three main chronological systems representing three main centres of biblical production: Alexandria's Septuagint (LXX), Jerusalem's Masoretic

¹ G. Larsson, *The Secret System* (Leiden: Brill, 1973), pp. 103-119 tabulates 300 entries between Genesis 1 and Ezra 3.

² On 3761 bce according to the modern Jewish calendar, or 5200 bce (Eusebius of Caesarea) or 4004 bce at 6 pm according to Archbishop James Ussher.

text (MT) and Samaria's Pentateuch (SP). In a fascinating study, Jeremy Northcote identifies eight revisions of an original Progenitor chronology.³ However, this original chronology is established from the onset by choosing the lowest available figures, a rather simplistic criterion for identifying the oldest chronological system of the Pentateuch that is likely to vitiate all subsequent attempts to understand its modifications.

To unlock the chronologies of the Pentateuch, three keys are used here: the Sabbatical calendar, the Priestly Document and the latter's overall weekly structure. At this point, a word of caution is due. The reader should realize that these keys are largely based on minority views regarding the nature, length and date of the Priestly document, and the origin of the seventh-day Shabbat. Since new advances are only possible when treading new ground, with all the dangers involved, the results of this enquiry are speculative, which is not necessarily something new in biblical studies. The following is a contribution to the debate over calendars in the Hebrew Bible, a debate that "has merely begun"⁴.

2. FIRST KEY: THE SABBATICAL CALENDAR

The Jewish apocryphal books of Jubilees (6:28-32.38) and of Enoch (1 Enoch 72-82) fervently uphold the value of a non-Babylonian way of reckoning time commonly referred to as the Jubilee or Sabbatical calendar⁵. This calendar is based on a 364-day year made up of 52 whole weeks and thus fixes the relationship of the days of the month with the days of the week. Every year every Sabbath falls on the same date; this was precisely the purpose of such a calendar. Its use is also reflected in the Pentateuch, Ezekiel, Haggai, Zechariah, Chronicles and Ezra-Nehemiah⁶. The travels of the Patriarchs are planned to respect the seventh-day rest and during their exodus the children of Israel do not start off or arrive

³ J. Northcote, "The Schematic Development of Old Testament Chronography: Towards an Integrated Model", *JSOT* 29 (2004), pp. 3-36, based on the Progenitor chronology of A. Jepsen, "Zur Chronologie des Priesterkodex", *ZAW* 47 (1929), pp. 252-255.

⁴ M.G. Abegg Jr., "The Calendar at Qumran", in J. Neusner & A.J. Avery-Peck (eds), *Judaism in Late Antiquity. Part five: The Judaism of Qumran: A Systemic Reading of the Dead Sea Scrolls. Vol. 1: Theory of Israel* (Leiden: Brill, 2001), pp. 145-171 (147).

⁵ J. Finegan, *Handbook of Biblical Chronology* (Princeton: University Press, 1964), pp. 49-57.

⁶ A. Jaubert, *La date de la cène* (Paris: Gabalda, 1957), pp. 32-38.

on a Sabbath day (Exod. 12:31; 16:1)⁷. Since some texts found in the caves near Qumran use this calendar, the Sabbatical calendar is viewed as an impractical invention of peripheral sectarian groups⁸.

However, Uwe Gleßmer has shown that this calendar was almost as precise as ours with its 365.25 days per average year. The addition of one whole week every 6-year cycle, plus an extra week every 84 years yields an average year of 365.2068 days. This is 51 minutes short of the exact solar year (365.2422 days)⁹.

The aim here is limited to determining the origin of this calendar, rather than its practical use. James VanderKam suggests that the 364-day calendar was in use in Jerusalem ‘during the early centuries of the second temple’¹⁰. Before we can be in a position to decide whether or not it was actually used in Jerusalem during the Persian period, we need to find evidence of its theoretical existence. To do so, I look to the original Priestly Narrative. The

⁷ See Jaubert, *Date*, 32-33.

⁸ J.C. Vanderkam, “The Origin, Character, and Early History of the 364-Day Calendar: A Reassessment of Jaubert's Hypotheses”, *CBQ* 41 (1979), pp. 390-411 = VanderKam, *From Revelation to Canon. Studies in the Hebrew Bible and Second Temple Literature* (Leiden: E.J. Brill, 2000), pp. 81-104 (97 n. 55); Abegg, “Calendar at Qumran”, 150. The following Qumran texts reflect the 364-day calendar: 1Q32; 1Q34; 4QMMLT; 4QShirShabb; 4Q252 frag. 1ii.3; 4Q317-30; 4Q319-336; 4Q365; 4Q559; 6Q17; 11QTemple; 11QPsa Dav Comp 27.6; cf. S. Talmon, “Calendars and Mishmarot”, in L.H. Schiffman & J.C. VanderKam (eds), *Encyclopedia of the Dead Sea Scrolls* (Oxford: University Press, 2000), vol. 1 pp. 108-117; T.H. Lim, “The Chronology of the Flood Story in a Qumran Text (4Q252)”, *JJS* 43 (1992), pp. 288-298.

⁹ U. Gleßmer, “Der 364-Tage Kalendar und die Sabbatstruktur seiner Schaltungen in ihrer Bedeutung für den Kult”, in D.R. Daniels, U. Gleßmer & M. Rösel (eds), *Ernten was man sät. FS für K. Koch* (Neukirchen-Vluyn: Neukirchener Verl., 1991), pp. 379-398. U. Gleßmer, “Horizontal Measuring in the Babylonian Astronomical Compendium MUL.APIN and in the Astronomical Book of 1En”, *Hoch* 18 (1996), pp. 259-282. U. Gleßmer, “The otot-Texts (4Q319) and the Problem of Intercalations in the Context of the 364-day Calendar”, in H.-J. Fabry, A. Lange & H. Lichtenberger (eds), *Qumranstudien. Vorträge und Beiträge der Teilnehmer des Qumranseminars auf den Internationalen Treffen des Society for Biblical Literature, Münster, 25.-26. Juli 1993* (Göttingen: Vandenhoeck & Ruprecht, 1996), pp. 125-164; U. Gleßmer, “Calendars in the Qumran Scrolls”, in P. Flint & J. VanderKam (eds), *The Dead sea Scrolls after Fifty Years: a Comprehensive Assessment* (Leiden: Brill, 1999), pp. 213-278.

¹⁰ VanderKam, “Origin”, 103. This hypothesis is at least a century old: B.W. Bacon, “Calendar of Enoch and Jubilees” *Hebraica* 8 (1891-92), pp. 79-88 (124-131). See bibliography in Vanderkam, “Origin”, notes 9-10.

following section attempts to prove that the notion of a 364-day calendar already existed at the beginning of the Persian rule over Palestine, because it was used as the framework of the original Priestly Narrative.

3. SECOND KEY: THE PRIESTLY DOCUMENT

Although not everyone agrees, I consider the Priestly Document ($P_g = \text{Priesterschrift Grundschrift}$) as a consistent narrative, rather than a late redaction layer¹¹, its date being widely agreed upon (late 6th century BCE). Priestly texts are easily recognized thanks to a very particular vocabulary and well defined theological categories, thus providing a fairly reliable textual corpus¹². P_g also presents a large amount of chronological data that may represent the original framework and chronology of the Pentateuch¹³. Despite such promising data, the meaning of P_g 's chronology remains a mystery; studies either avoid it completely, or focus on particular segments like the Flood chronology or on the final form of the biblical text from Creation to Hanukkah¹⁴.

Although P_g opens with a magnificent celebration of the seven-day week (Genesis 1), it has not yet been studied from the point of view of calendars. This text was written at the onset of Persian dominion over Palestine, either before or just after the first Persian conquest of Egypt (525—522 BCE)¹⁵ to celebrate the restoration of the Yhwh cult in Jerusalem (520 BCE)¹⁶. Among the

¹¹ J.L. Ska, “De la relative indépendance de l’écrit sacerdotal”, *Bib* 76 (1995), pp. 396-415. W.H.C. Propp, “The Priestly Source Recovered Intact?”, *VT* 46 (1996), vol. 2 pp. 458-478.

¹² See list of verses in N. Lohfink, “The Priestly Narrative and History”, in *Theology of the Pentateuch* (Edinburgh: T&T Clark, 1994), p. 145 n. 29.

¹³ E.A. Knauf, “Die Priesterschrift und die Geschichten die Deuteronomisten” in T. Römer (ed.) *The Future of the Deuteronomistic History* (Leuven: University Press, 2000), pp. 101-118 (111 n. 45).

¹⁴ Bibliography in Northcote, “Development”, 33-36.

¹⁵ A. de Pury, “Der Priesterschriftliche Umgang mit der Jakobsgeschichte”, in R.G. Kratz, Th. Krüger & K. Schmid (eds), *Schriftauslegung in der Schrift* (Berlin: W. de Gruyter, 2000), pp. 33-60 (39); P. Briant, *From Cyrus to Alexander* (Winona Lake: Eisenbrauns, 1996), pp. 67-69.

¹⁶ E.A. Knauf, “Der Exodus zwischen Mythos und Geschichte: Zur priesterschriftlichen Rezeption der Schilfmeer-Geschichte in Ex 14”, in R.G. Kratz, Th. Krüger & K. Schmid (eds), *Schriftauslegung in der*

three hypotheses concerning the scope of Pg, I favour the long version that spans from Genesis to Joshua.¹⁷ That is, from creation to the first Passover in the land, the end of manna (Josh. 5:10-12) and the setting of the tent of meeting at Shiloh (Josh. 18:1). Pg provides a comprehensive presentation of the Hebrews' origin and the celebration of the beginning of a new era in Palestine: the transfer to Persian rule.

In this context, Pg marks the end of Babylonian hegemony that led to the destruction of Jerusalem 70 years earlier, with the subsequent devastation of the whole of the area south and west of Jerusalem down to the Egyptian border, the transfer of this no-man's land to Edomite herders and the set up of a new administrative centre at Mizpah (Jeremiah 40)¹⁸. The pro-Babylonians at Mizpah, the clergy at the ancient temple of Bethel and the whole of the Benjaminite population that remained in the area after the destruction of Jerusalem were far from enthusiastic about Persian rule, even less with the prospect of the massive return of deportees from Babylonia (a threat that did not materialize) and the possible rebuilding of the Jerusalem temple. However, a small group of Babylonian Jews secured official Persian backing to revive the Jerusalem cult, probably presented as a local form of the worship of the creator God. Pg was composed in this context and the notion that a new calendar would have been introduced at the same time does not seem extravagant. It would phase out the Babylonian lunar calendar and celebrate the demise of the Babylonians alongside the reconstruction of a Judaean political entity based in Jerusalem rather than at Mizpah. In spite of some similarities with Mesopotamian calendars¹⁹, the seven-day week of Genesis 1 bears striking parallels to the Zoroastrian

Schrift. Festschrift für Odil Hannes Steck zu seinem 65. Geburtstag (Berlin: de Gruyter, 2000), pp. 73-84.

¹⁷ N. Lohfink, *Les traditions du Pentateuque autour de l'exil* (Paris: Cerf, 1996); Knauf, "Priesterschrift", 101-118. Others consider that the original document ended with the setting up of the tabernacle (Exodus 40): Th. Pola, *Die ursprüngliche Priesterschrift* (Neukirchen-Vluyn: Neukirchener Verlag, 1995); de Pury, "Umgang", 39; or at Moses' death (Exodus 34): E. Zenger et al., *Einleitung in das Alte Testament*, (Stuttgart: Kohlhamer, 1996).

¹⁸ O. Lipschits, "The History of the Benjamin Region under Babylonian Rule", *Tel Aviv* 26 (1999), pp. 155-190.

¹⁹ In the seventh century BCE, Babylon reformed the Ashur hemerologies that counted nine unlucky days every month by reducing their number to the 7th, 14th, 19th, 21st and 28th days: R. Labat, *Nouveaux textes hémérologiques d'Assur* (Paris: 1957), pp. 306-307; E. Puech, "Requête d'un moissonneur du sud-judéen à la fin du VIIème siècle av. J.-C.", *RB* 110 (2003), pp. 5-16 (note 19).

calendar with its four monthly weeks with four days (1st, 8th, 15th and 23rd days of every month) dedicated to the Creator Dadvah Ahura Mazda²⁰.

Here, it becomes difficult to go any further since the date of (the origin of) the Zoroastrian calendar is not established. Mary Boyce understands the parallel with Genesis 1 as the influence of the Semitic week on the Zoroastrian calendar²¹. However, the typical “Semitic” week as it is attested in the older biblical strata divided the month in two parts, between the full and the new moon. On the basis of the modest influence of Jews within the Persian empire and the very favourable depiction of Cyrus in biblical literature (Isaiah 40—45), it is more likely that the direction of influence goes in the opposite direction, from the Zoroastrian calendar to the seventh day Shabbat of Genesis 1²².

Another related problem arises, that of the religion of the first Persian rulers. Were the Achaemenids Mazdaeans? There is no evidence of it for Cyrus²³, and it is more likely in Cambyses’ case: his mother was a Persian and the name of his sister Atossa appears to be the earliest trace of Zoroastrian influence among the early Achaemenids²⁴. However, this does not prove that Cambyses used the Zoroastrian calendar. The evidence shows that Cambyses’ administration used the Late Babylonian luni-solar calendar, stabilized by an octaeteris (three months intercalated during an 8-year cycle) in 527 BCE²⁵. More Zoroastrian input is likely during the reign of Darius I²⁶. In any case, a Zoroastrian model may have

²⁰ A. Panaino, “Calendars I: Pre-Islamic”, in E. Yarshater (ed.), *Encyclopaedia Iranica* (London: Routledge & Kegan Paul, 1990), vol. IV pp. 658-668 (661).

²¹ M. Boyce, *Zoroastrians, their Religious Beliefs and Practices* (London: Routledge & Kegan Paul, 1985), p. 71.

²² See A. Lemaire, “Le Sabbat à l’époque royale israélite”, RB 80 (1973), pp. 161-185; J.M. Sasson, “Time... to Begin”, in M. Fishbane (ed.), *“Sha’arei Talmon”: Studies in the Bible, Qumran, and the Ancient Near East* (Winona Lake: Eisenbrauns, 1992), pp. 183-194.

²³ Briant, *Cyrus to Alexander*, 105-106.

²⁴ M. Waters, “Cyrus & the Achaemenids”, *Iran* 42 (2004), pp. 91-102 (99); M. Boyce, *History of Zoroastrianism* (Leiden: Brill, 1982) II.41.

²⁵ A second reform was introduced by Darius I in 503 BCE, consisting of seven intercalary years in a 19-year period: G.R.F. Assar, “Parthian Calendars at Babylon and Seleucia on the Tigris”, *Iran* 41 (2003), pp. 171-191 (171).

²⁶ J. Bremmer, “Canonical and Alternative Creation Myths in Ancient Greece” in G.H. van Kooten (ed.), *The Creation of Heaven and Earth. Re-*

inspired Jews from the Babylonian Diaspora, whether or not the Achaemenid rulers worshipped Ahura Mazda. The early Persian period remains a convincing backdrop for the design of a new cultic calendar marking the end of the Babylonian rule, so showing loyalty to the Persian benefactors, while the administration of the empire carried on using the Babylonian calendar. Although history provides no confirmation on this point, the early Persian period remains the most likely moment to introduce a new calendar in Jerusalem, a calendar independent of astral recurrent phenomena apart from the rising and setting of the sun²⁷, a calendar that avoids the lunar cycle in favour of celebrating the Creator Ahura Mazda under the name of its local manifestation, Yhwh.

The new calendar is embedded in a narrative (Pg) presenting the mythological origins of Israel from Creation to Israel's entry into the land of Canaan. Within this narrative, secondary additions are easily recognizable. Its overall structure is built around numerous chronological milestones, from the days of creation, the ages of ancestors, dates of the flood, Abraham's migrations, the Exodus and Israel's wanderings in the desert until their arrival in the Promised Land²⁸. But so far the attempts to make sense of Pg's chronology have not gained much acceptance, due to the lack of reliable criteria to sort out the Samaritan, Greek and Hebrew data, and because the wrong calendars have been used: previous studies all use solar and luni-solar categories.

4. THIRD KEY: THE PRIESTLY NARRATIVE AS A WEEK OF SEVEN ERAS

Reflecting Pg's marked penchant for heptads²⁹, the whole extent of Pg from Creation to the settlement in the Promised Land can be

interpretations of Genesis 1 in the Context of Judaism, Ancient Philosophy, Christianity, and Modern Physics (Leiden: Brill, 2005), pp. 73-96 argues that Genesis 1:1 should be seen as a reaction to Darius' statements about Ahuramazda as the creator of heaven and earth in Persian inscriptions from the end of the sixth century BCE.

²⁷ J.M. Sasson, "Origins and Media. Creation Narratives in Ancient Israel and in Mesopotamia", in L.J. Bord & P. Skubiszewski (eds), *La création, liberté de Dieu, liberté de l'homme* (Paris: Cariscript, 2001).

²⁸ 44 chronological indications: Gen. 1:14; 2:1; 7:6.11.12.17; 8:4.5.13.14; 11:10.26.32; 12:4; 16:3.16; 17:1; 21:5; 23:1; 25:7.17.20.26; 26:34; 35:28; 47:28; Exod. 7:7; 12:40; 16:1; 19:1; 24:16.18; 40:17; Lev. 9:1; Num. 1:1; 10:11; 13:25; 20:1.29; Deut. 1:3; 34:7; Josh. 4:19; 5:10.11. For a slightly different list see S.E. McEvenue, *The Narrative Style of the Priestly Writer* (Rome: Biblical Institute Press, 1971).

²⁹ W.H.C. Propp, *Exodus 1-18* (New York, Doubleday, 1998), p. 315.

divided into seven eras. This system of eras is based on a sequence of creation periods the lengths of which are reckoned in sevens and multiples of seven, followed by periods of purifying destructions³⁰. There the number six and its multiples are the basic unit.

The duration of each of these seven eras is designed to reveal key elements of the Jubilee calendar and its intercalation method, as indicated in the following table:

1 Creation Gen 1:1-2:4	2 Violence Gen.5:1- 6:10	3 Recreation Gen. 6:11- 8:19	4 Exiles Gen. 9:1- 11:31	5 Exodus Gen 12:1- Ex40:35	6 Wandering Ex. 12:40 - Josh. 4:19	7 Shabbat Josh. 18:1
7 days	600,000 days +6 years+ 6 months + 6 weeks + 59 days	7 months	365 years	14 Jubilees minus 40 years	3 days short of 40 years	For ever?
Cosmogony	Creation to Flood	Resting of the ark to its opening	Arphaxad's birth to departure from Haran	Haran to Glory filling the tent	Sea to Jordan	In the land
Week	Time goes too fast	1 season = 91 days	1 week inter- calated every sabbatical year	Jubilee	1 week interca- lated every fifth sabbatical year	

These keys provide a set of criteria to test Pg's chronological system and variant readings.

4.1 Day 1: Creation, the first week

The basic unit of the calendar is spelled out: the seven-day week rendered sacred by its attribution to God. The Sabbatical calendar is the only truly perpetual calendar. Since its years are always made up of whole weeks, all festivals are set once for all within the week; such a perfect regularity thus avoids the kind of calendar chaos that requires moving the date of festivals so that the days of preparation of the Passover do not fall on the Shabbat. The rejection of the monthly unit is clearly marked by the absence of months in Gen. 1:14 and the absence of Babylonian month names in Pg³¹. Although

³⁰ R.S. Kawashima, 'The Jubilee Year and the Return of Cosmic Purity', *CBQ* 65 (2003), pp. 370-389.

³¹ As noted by F.H. Cryer, "The Interrelationships of Gn 5:32; 11:10-11 & the Chronology of the Flood (Gen. 6-9)", *Biblica* 66 (1985), p. 241-

the moon is created like the sun and the stars and it is accepted as one of the providers of signs³², in fact it plays no role in determining months, which are instead based on a purely mathematical count ($3 \times 30 + 1$ days). This likely reflects Persian propaganda. After defeating the last Neo-Babylonian king (539 BCE), Cyrus claimed that he was sent by Marduk, Babylon's main divinity, to put an end to the heresy of Nabonidus. Cyrus gained the support of the Babylon clergy by interpreting Nabonidus' building activities at Harran, the sanctuary of the moon-God Sîn, as the proof of his incompetence and the reason for his downfall³³.

Rejecting Sîn also involved an etymological feat: the presentation of the Sabbath as a day of rest on the seventh day is in itself a major innovation compared to the Babylonian system based on lunar months: the new moon marked the beginning of the month and the full moon its middle. Each month was thus made of two weeks (new to full moon and full to new moon), the full moon bearing the Akkadian name *shapatum* from the root *shaba* “to be full” and not from *sebet* “seven”. The Hebrew term *shabbat* cannot derive from the root that provides the word *sheba* “seven” because the transformation of the *ayin* into *taw* is impossible. The Hebrew Shabbat is thus directly borrowed from the Akkadian *shabatum* “full moon” since Akkadian regularly drops guttural letters, in this case the *ayin*. The Priestly writer(s) who composed Genesis 1 then transformed the Babylonian sabbath of the full moon into the seventh day. Such transformation could have been facilitated by the fact that the Babylonian Pleiades, the *sibitti* are pictured as seven dots³⁴. Since the point of Genesis 1 is not teaching how the world was created but that the Sabbath is now a day of rest set on the seventh day, it is likely that the transformation of the Shabbat from the full moon to the seventh day was worked out by the writers of

261 (248). It is not impossible that Pg also introduced the numerical naming of months. Although they do not suggest it, see D. & Z. Talshir, “The Double Month Naming in Late Biblical Books: a New Clue for Dating Esther”, *VT* 54 (2004), pp. 549-555.

³² Not necessarily calendar signs but omens and portents for coming events: E. Tigchelaar, “Lights Serving as Signs for Festivals” (Genesis 1:14b) in *Enūma Eliš and Early Judaism*, in G.H. van Kooten (ed.), *The Creation of Heaven and Earth. Re-interpretations of Genesis 1 in the Context of Judaism, Ancient Philosophy, Christianity, and Modern Physics* (Leiden: Brill, 2005), pp. 31-48.

³³ W.W. Hallo, *The Context of Scripture* (Leiden: Brill, 2000), pp. 313-316.

³⁴ J. Black & A. Green, Art. “Seven Dots”, in *Gods, Demons and Symbols of Ancient Mesopotamia - An Illustrated Dictionary* (London: British Museum Press, 1992), p. 162.

Genesis 1. The subsequent Hebrew, Syriac and Arabic meanings ‘to rest’ all derive from this theological transformation carried out in Genesis 1 and Exodus 16 (the manna story). As such, it has no etymological basis³⁵.

4.2 Day 2: Antediluvian Era

This period is marked by long life-spans and increasing violence (Gen. 6:11) exemplified by the names of the last ancestors of the list³⁶. The Flood begins when the rain started (Gen. 7: 11) on 17 II 1307 (SP), 1656 (MT) or 2262 (LXX). I choose MT’s date since it is the only one that makes sense within the framework of the criteria I selected. From creation to the 17th of the second month 1656, there is a total amount of 602,467 days: (1655 x 364) + 30 (month I of year 1656) + 17 (in month II). It is one day short of 600,000 days + 6 years + 6 months + 6 weeks + 60 days: 600,000 + 2,184 (6 x 364) + 182 (30 + 30 + 31 + 30 + 30 + 31) + 42 (6 x 7) + 60 = 602,468 days. Symbolically, this indicates that the flood resulted in the complete destruction of all creatures except one family (Gen. 6:19), since number six has destructive value.

This sum can only be reached with the Sabbatical calendar. There is no intercalation and for this reason years are too short. Consequently, people age too quickly. Hence violence prevails during the antediluvian era that Pg presents as the reason for the Flood (Gen. 6:11): violence against the sacred rhythm of time made explicit in Jubilees 6:32-38. High longevity underlines the need for intercalation.

One can argue that the week of creation should be subtracted from year 1 since it is already counted as a separate period. According to the Sabbatical calendar, New Year’s Day is always on Wednesday (day four) because God created the calendar on the fourth day of creation when he created the heavenly luminaries. Thus, three days should be removed from year 1 yielding a total of 602,464 days. In this case, the four days missing symbolize Noah and his three sons who did not perish in the Flood.

4.3. Day 3: Re-Creation

³⁵ Exod. 16:3 plays with the alliteration *yashab* “to sit” and *saba* “to be full” to provide another (fake) etymology for the Shabbat.

³⁶ Genesis 5: Little smith (Kenan), Renders God mad (Mahalel), Going down (Jared), Spear thrower (Methuselah), Sword (Lamech).

Contrary to all previous studies of the Flood chronology, I have been led to consider the actual period when the earth was flooded as a time gap, which in fact is clearly indicated by an oddity that has defied the sagacity of exegetes³⁷: Noah is 600 years old when the Flood is on the land (Gen. 7:6), he lives 350 years after the Flood and dies at age 950 (Gen. 9:28-29). The period of actual flooding does not count. This solves the crux of Shem's age when he fathers Arphaxad “two years after the Flood” (Gen. 11:10). He is said to be 100 years old, but two years after the flood Shem should be 102 since Noah fathered him and his two brothers³⁸ when he was 500 (Gen. 5:32) and the flood came when Noah was 600 years old (Gen. 7:6). If the Flood is a time gap and a suspension of the calendar due to a return to chaos, Shem and Noah did not age during their stay in the ark. Shem is 100 years old before and after the Flood. The missing two years represent the approximate duration of the Flood as it spans from the second month (Gen. 7:11) to the seventh month (Gen. 8:4) of the following year (Gen. 8:13). Indicating that Shem is still 100 years old after the Flood, Pg insists that the flooding period represents a time gap not reckoned by the calendar³⁹. This is consistent with P’s theology that considers the Flood as a return to the chaotic *tohu wabohu* before creation.

Thus this period does not start at the beginning of the Flood but at the end. Mirroring the creation week, it takes exactly seven months between the “resting” of the ark on Mount Ararat and its opening (27 II to 27 VII) if LXX’s 27 VII is chosen against MT’s 17 VII in Gen. 8:4⁴⁰. The choice of LXX against MT is of course in contradiction to the previous section where MT’s Flood date was preferred to LXX’s. However, the fact that the seven months thus achieved mirror the seven days of Genesis 1 is too striking to be dismissed for the sake of consistency. Both LXX and MT have

³⁷ Cryer, “Interrelationships”, (248) considers that Shem was born at some point after Noah’s 500th year. K. Stenring, *The Enclosed Garden* (Stockholm: Almqvist & Wiksell, 1966), p. 89 explains that the 2-year difference indicates the use of different calendars.

³⁸ LXX solves the problem by considering Japhet as the older brother in Gen. 10:21: G. Larsson, “The Chronology of the Pentateuch: a Comparison of the MT and LXX”, *JBL* 102 (1983), pp. 401-409 (405).

³⁹ For a similar phenomenon see F. Bovon, “The Suspension of Time in Chapter 18 of Protoevangelium Jacobi”, in F. Bovon, *Studies in Early Christianity* (Tübingen: Mohr Siebeck, 1991/2003), pp. 226-237.

⁴⁰ S. Najm & Ph. Guillaume, “Jubilee Calendar Rescued from the Flood”, *Journal of Hebrew Scriptures* 5 (2004), available at <http://www.jhsonline.org>,

been subjected to revisions and I do not believe that one should be preferred against the other in principle. On the contrary, the recovery of a meaningful system of dates can only be achieved by remaining flexible. I thus feel justified to select the LXX dates when they fit the hypothesis I am trying to demonstrate, even if this inevitably smacks of circular reasoning. However, this 10-day difference between LXX and MT can easily be explained as resulting from the introduction of a 360-day calendar year with all 30-day months (5 months = 150 days), probably during the Ptolemaic domination of Palestine (320—200 BCE). The LXX would have been translated into Greek before this change and it thus retained the older reading.

The LXX's dates delineate the month-system of the Sabbatical calendar with its 30-day months except for months III, VI, IX and XII that have 31 days. This month system and the 40 days of rain before the actual flooding yields a sum of 36 full weeks or $6 \times 6 \times 7$ days⁴¹.

		Days	Dates
Gen. 7:11	Flood starts		17/II Sunday
Gen. 7:12	Rain	040	
Gen. 7:17	Ark afloat	000 Time gap	Calendar gap
Gen. 8:4	Ark rests	$156 = 3+30+31+60+31+1$	27/VII (LXX) Monday
Gen. 8:13	Ark uncovered		1/I Wednesday
Gen. 8:14	Ark opened	$056 = 29 + 27 = 8 \times 7$	27/II Wednesday
Total		252 = 36×7	

Symbolically, the destructive power of the six is softened by the seven.

4.4. Day 4: Postdiluvian Era: orphans, barren women and exiles

The Postdiluvian era spans from the begetting of Arphaxad to Abram's 75th year when he left Haran (Gen. 12:4). It is marked by a sharp reduction of life-span ending with dislocation --the need to move out of one own land-- in sharp contrast to the one people/one land principle featured by the table of nations (Genesis

⁴¹ To get this count, I integrate the 40 days of rain as the beginning of the Flood (Gen. 7:12) into Pg, *contra* Lohfink, "Priestly Narrative".

9). Sarai is the first attested barren woman⁴² and Lot is the first orphan (Gen. 11:28). Thus Terah moves out of Ur of the Chaldeans after the death of his son and goes to Haran with his childless son Abram and his orphaned grandson Lot. Then Abram and Lot leave for Canaan without Terah. According to MT and LXX, Terah dies at age 205, remaining on his own in Haran for 60 years, thus underlining the negative aspect of the period, in sharp distinction from the next era inaugurated by Abram's departure. SP is clearly a *lectio facilior* since it has Abram leave when Terah died at age 145 but eliminates the extra 60 years, thus missing their symbolic value⁴³. This time only whole years are counted since there is no mention of days and months. Adding the begetting ages of the Postdiluvian ancestors, from Arphaxad to Terah, plus Abram's 75 years gives the length of this period: $35 + 30 + 34 + 30 + 32 + 30 + 29 + 70 + 75 = 365$ years.

These 365 years either contradict the notion that Pg is using the 364-day calendar or reveal that one week is intercalated every seven years. The intercalation on the sabbatical year yields an average year of 365 days while the calendar remains based on a 364-day calendar year. Intercalating a whole week at the time does not interfere with the sacred succession of the Sabbaths and thus does not modify the principle of the calendar.

These 365 years are also Enoch's life span (Gen. 5:23), and his very positive presentation (he walked with God and did not die) makes him stand out within the list of antediluvian ancestors. The Book of Astronomical Writings, one of the works defending the validity of the Sabbatical calendar was attributed to Enoch (1 Enoch 82:1). However, the book of Jubilees only attributes to Enoch the invention of the art of writing (Jub. 4:17), and not the calendar. Jubilees disputes Enoch's contribution to the calendar precisely because Enoch's role in Pg is to introduce intercalation!

4.5 Day 5: Exodic Era

Again, this era is calculated in full years, starting with Terah's death in Haran, a highly symbolic event since Haran was the location of the sanctuary of Sîn, the Assyro-Babylonian Moon-god, to whom

⁴² Verse 30 may be post-P: E.A. Knauf, "Supplementa Ismaelitica 17. זלן אין לה Gen. 11,30 18", BN 86 (1997), pp. 49-50; but Sarai's barrenness is nevertheless implied in v. 31.

⁴³ Why Acts 7:4 follows SP rather than LXX remains to be explained. Is Stephen a Samaritan?

Nabonidus the last Neo-Babylonian king was very devoted⁴⁴. Terah's death in such a highly meaningful place underlines the rejection of the lunar calendar already attested in Gen. 1:14 by the absence of months. Then, Yhwh appears for the first time in Pg to spur Abram's departure for Canaan at age 75. This new era spans the patriarchal period until the Exodus out of Egypt and the setting up of the tabernacle in the desert:

Abraham begets Isaac at 100 (Gen. 21:5), 25 years after leaving Haran (Gen. 12:4)	025
Isaac begets Esau and Jacob at 60 (Gen. 25:26)	060
Jacob enters Egypt at 130 (he died at 147 and stayed 17 years in Egypt Gen. 47:28)	130
The Israelites stayed 430 years in Egypt (Exod. 12:40) ⁴⁵	430
The glory fills the tabernacle on 1 I of year 2 after crossing the sea (Exod. 40:34)	001
Total	646

There are thus 646 years between Haran and the glory of the Lord filling the tabernacle⁴⁶. 646 years are 40 years short of 14 jubilees ($14 \times 49 = 686$). These 40 years represent the duration of the last purification effected by the death of the exodus generation that slandered the Promised Land (Num. 14:32). The meaning of these 40 years is delineated in the next era.

4.6 Day 6: Wilderness

Having slandered the good land given by Yhwh, the people need to undergo a last purification: the entire generation that came out of Egypt (600,000 men) will die in the wilderness (Num. 14:28-29). The exact duration of the purification, from the return of the scouts to the crossing of the Jordan is impossible to calculate since the day of their sending off is missing and the length of the journey from Sinai to Paran is not mentioned (Num. 10:12; 12:16b)⁴⁷.

Although the wilderness period is often stated to be forty years (Exod. 16:35; Num. 14: 33-34; 32:13; Deut. 2:7; 8:2-3; 29:5; Josh. 5:6) it was actually about 3 days short of 40 years⁴⁸. These 3 days must be accounted for. I suggest that they correspond to the

⁴⁴ See Hallo, *Context of Scripture*, 2.310-314.

⁴⁵ Again, I follow MT. SP and LXX include within these 430 years the sojourn of the patriarchs in Canaan: LXX^B = 435.

⁴⁶ This period is framed by the first two mentions of Yhwh's name (Gen. 12:1; Exod. 40:34) which will be fully revealed only to Moses (Exod. 6:2-3).

⁴⁷ Num 10:33 is not attributed to P.

⁴⁸ From the crossing the sea on 14th or 15th I (Exod. 12:6.41) to 10 I of the 41st year after coming out of Egypt (Deut. 1:3 and Josh. 4:19) when the generation born after the Exodus crosses the Jordan.

lag of the Sabbatical calendar against the solar year after 40 years, in spite of intercalation. But what kind of intercalation? If the Postdiluvian era reveals an average year of 365 days (intercalating a week every sabbatical year), after 40 years the calendar is about 10 days behind the sun. If another whole week is intercalated again sometimes within those forty years (into the fifth sabbatical year?), the gap is reduced to less than 3 days:

$$364\text{-day year: } 40 \times 364 = 14,560 \text{ days}$$

$$\text{Intercalation 1: } 40 \times 365 = 14,600 \text{ days}$$

$$\text{Intercalation 2: } 14,600 + 7 = 14,607 \text{ days}$$

$$\text{Solar year: } 40 \times 365.2422 = 14,609.688 \text{ days}$$

Such intercalation is similar to one of the methods suggested by Gleßmer⁴⁹. I thus find no better explanation for the days that are missing to make up a whole 40 years in the wilderness apart from a desire to control the approximate lag of the calendar using intercalation. It is certainly less precise than the methods found in 4Q319, and this reveals early stages in the formation of the Sabbatical calendar. It also indicates that the 364-day calendar was not purely theoretical as is often claimed⁵⁰. Its creators were eager to keep it in step with the yearly solar cycle and Pg used the length of the Exodus to indicate it. Theology need not cut theologians from observable reality.

4.7 Day 7: Shabbat

The arrival in the land marks the celebration of the first Passover, the end of the manna (Josh. 5:10-12) and the establishment of the tabernacle in Shiloh, while the land was subdued (Josh. 18:1), establishing a neat inclusio with Gen. 1:28. Jubilees places the arrival in the land halfway through the total duration of one century of Jubilees (4900 years) = $2410 + 40 = 2450 \times 2 = 4900$ years. But it is doubtful that Pg envisioned an end to the perfect world created by God⁵¹.

⁴⁹ Gleßmer, “Calendars”, identifies two possible methods on the basis of the text of 4Q319: adding a week every sabbatical year plus an additional week every fourth sabbatical year or adding a week every six-year cycle plus an additional week in the fourteenth cycle.

⁵⁰ Pace Abegg, “Calendar at Qumran”, 150.

⁵¹ In Pg, the world is created very good (Genesis 1) and there is no story of the fall (Gen. 2—3). On the contrary, Pg has a number of other

5. CONCLUSION

Is it possible to ascertain on the basis of Pg's overall chronology that the 364-day calendar was used at the beginning of the Persian period?

In spite of uncertainties due to insertions that greatly expanded the size of the original narrative, it is still possible to identify a coherent pattern that is unlikely to be the result of chance. All the elements of the calendar are spelled out in the course of the narrative: the week as the fundamental element (Era 1), the month system (Era 3), the year and the jubilee (Era 5)⁵². The clearest instance of the use of the 364-day calendar is the chronology of the recreation period after the flood (Era 3). Only with the month system particular to the Sabbatical calendar (30 + 30 + 31 days) can an exact number of weeks be reached. That these 7 months not only contain a symbolic number of whole weeks (6 x 6) but also reflect the seven days of creation is not fortuitous, but denotes a coherent system that is preserved in spite of subsequent attempts to introduce other systems (150 days).

Intercalation is also apparent. The antediluvian Era 2 presents a “fast clock” stressing the need for intercalation so that humans may reach more “natural” ages. Reckoned in full years, Era 4 spells out the number of days per year after a first intercalation of a week every sabbatical year. Era 6 presupposes a second intercalation of another whole week in the fifth sabbatical year. The overlap between Eras 5 and 6 is a weakness of the system since Era 5 ends when the Tabernacle is filled with the Glory of the Lord while Era 6 starts one year earlier at the crossing of the sea. So far, I have no better solution to offer, as the date of the arrival of the Hebrews at Paran is not recorded.

Rather than transmitting a secret system, Pg presupposes the prior knowledge of the calendar. The specifics of the calendar are never spelled out explicitly and Pg appears as a scribal compendium teaching Israel's mythological origins, its classical language and

‘original sins’, duly purified in order to preserve the world’s goodness: N. Lohfink, “Original Sins in the Priestly Historical Narrative”, in Lohfink *Theology of the Pentateuch* (Edinburgh: T&T Clark, 1994), pp. 96-115.

⁵² See R.S. Kawashima, “The Jubilee, every 49 of 50 years?”, *VT* 53 (2003), pp. 117-120.

sacred calendar in narrative form. Admittedly, this remained rather basic compared to Babylonian science⁵³.

As for the date of the Sabbatical calendar, it is highly unlikely that the sacred seven-day structure so obvious in Genesis 1 was not carried over into the other parts of Pg. The symbolic structure of Genesis 1 is reflected in the seven fold succession of eras. Since there is a rare scholarly consensus over a Late Babylonian or Early Persian date for Pg, it is hard to avoid the conclusion that its calendar is contemporary to Pg or earlier, at a point in time when the establishment of a non-lunar calendar makes the most political sense. The claim that the Sabbatical calendar is later than Pg requires that one understands Genesis 1 as the brilliant introduction of a calendar that was dropped as soon as it was invented only to be brought to the fore by the calendar disputes that tore Judaism in the last two centuries before the Common Era. Whereas Genesis 1:14 conceded a limited role to the moon while considering the sun as the chief regulator of the calendar, later works reflect entrenched positions. *Ben Sira* (ca. 175 BCE) denies calendar significance to the sun and favours the lunar calendar against *1 Enoch*, *Aramaic Levi*, *Jubilees*, and *Rule of the Community* that all reject the moon's role to set the date of festivals⁵⁴. Those polarized positions do not reveal the origin of the Sabbatical calendar but rather later developments. The texts that defend the Sabbatical calendar come from traditionalists reacting against innovations rather than from innovators themselves. *Ben Sira*, written in Alexandria⁵⁵, represents the Diaspora's desire to keep the common luni-solar calendar as opposed to traditionalists of the "Holy Land" who would have liked to celebrate the re-establishment of an independent dynasty in Jerusalem with a return to the Sabbatical calendar. What had been a fitting way to celebrate the end of Babylonian rule⁵⁶ was expected to be done again at the withdrawal of the Seleucids. But the Hasmonaean rulers decided against it. They did bring about some chronological changes in

⁵³ See D.W. Young, "The Sexagesimal Basis for the Total Years of the Antediluvian and Postdiluvian Epochs," *ZAW* 116 (2004), pp. 502-527.

⁵⁴ B.G. Wright, "Fear the Lord and Honour the Priest? Ben Sira as Defender of the Jerusalem Priesthood", in P.C. Beentjes (ed.), *The Book of Ben Sira in Modern Research* (Berlin: de Gruyter, 1997), pp. 189-222 (204-208); J.C. VanderKam, *Calendars in the Dead Sea Scrolls: Measuring Time* (London: Routledge, 1998), p. 27; Tigchelaar, "Lights", 37-46.

⁵⁵ P. McKechnie, "The Career of Joshua Ben Sira", *JThS* 51 (2000), pp. 1-26.

⁵⁶ Ph. Guillaume, 'Genesis 1 as Charter of a Revolutionary Calendar', *Theological Review* 14 (2003), pp. 141-148.

order to set Hanukkah on a symbolic date⁵⁷, but these innovations did not re-establish the Sabbatical calendar. Why would the Hasmonaeans change the calendar? They entertained excellent relations with Egypt and thus retained the calendar of the Ptolemies. Hence the protests found in Jubilees and in the Dead Sea scrolls. However, despite their pleas, the traditionalists could not recover the tradition intact. Even had they wanted to, the original Priestly chronology had been updated to take into account the numerous textual additions inserted into Pg, and it was thus impossible to go back to the original system. This point is best exemplified by the chronological system described in the book of Jubilees (ca. 150 BCE) which, in spite of the fact that it upholds the value of the Sabbatical calendar, is interested in chronology rather than in calendar⁵⁸; thus the dates provided by Jubilees bear little resemblance with Pg's⁵⁹. The calendars of the books of Jubilees and Enoch go back to the principles of the Sabbatical calendar, but its principles only. Their chronologies reflect secondary developments⁶⁰ rather than the original 364-day calendar. Hence, their chronologies disprove the notion that the Sabbatical calendar was invented around the second century BCE. Had a Maccabaean Sabbatical calendar been imposed on Pg's earlier chronology, greater similarities between Jubilees and Pg would be expected. On the contrary, the fact that they remember a calendar that does not fit the narrative they are transmitting points towards the antiquity of the Sabbatical calendar that derived from Pg before it was expanded.

⁵⁷ J. Blenkinsopp, *The Pentateuch* (New York: Doubleday, 1992), p. 48.

⁵⁸ E. Wiesenberg, "The Jubilee of Jubilees", *RevQ* 3 (1961-2), pp. 3-40 (4).

⁵⁹ See comparative table in Northcote, "Development", 32. Flood in AM 1207, Exodus in AM 2410. Since Adam remained in the garden until the eighth year, there are 2401 years between his exit from the garden and the Exodus = 49 jubilees. Jubilees' Flood chronology is a composite of the final form of Genesis, with a keen awareness of the differences between MT and LXX for the date of the grounding of the ark on Ararat. Jub 5:29 avoids the problem by mentioning that "on the new moon of the 7th month, all the mouths of the deeps of the earth were opened". This omission is compensated by the addition of the 17th of the 7th month when the land was dry, before following again the Biblical text that sets the opening of the ark on the 27th of the same month.

⁶⁰ J.T. Rook, "A Twenty-eight-day Month Tradition in the Book of Jubilees", *VT* 31 (1981), pp. 83-87.

VanderKam's notion that the 364-day calendar was in use in Jerusalem 'during the early centuries of the second temple' should therefore be taken very seriously⁶¹.

⁶¹ VanderKam, "Origin", 103.