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How the Sun Stood Still: Old English Interpretations of Joshua and the Leap Year

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Abstract. The Leofric Missal (late ninth- or early tenth-century French-English) explains that the 'sun stood still' for Joshua at Gibeon because the battle occurred on leap day, precisely when, in the Roman calendar, two consecutive days had the same date. A tenth-century Old English text by Ælfric also mentions and critiques this 'priestly' computistical explanation.

The famous miracle related in Joshua 10:12–14, that the 'sun stood still in the midst of heaven, and hasted not to go down a whole day', has long troubled Biblical interpreters. In this note, I would like to discuss a short Old English tract that shows considerable astronomical and exegetical ingenuity in explaining the Joshua story in terms of leap day in the Roman calendar.

The Latin passage in question is found in the so-called 'Leofric Missal' (Oxford, Bodley Library, Bodley 579), an important source for Anglo-Saxon liturgical practice dating from the late ninth or early tenth centuries. Recent scholarship indicates that different strata of this work were written in France and in England. Originally compiled for Plegmund (890–923), archbishop of Canterbury, the final work was (over a period of 130 years) augmented for his successors, including Leofric (1050–1072), who became the first bishop of Essex and in whose cathedral this volume was eventually deposited.[*] Though

including texts and cues for the sung parts of various masses, this missal also contains a variety of sacramentary, pontifical, and ritual texts. Accompanying its calendar of feasts, one particular passage addresses the calendrical art called *computus*, 'a term denoting such reckoning [of time] at all levels from initial learning of numerals, practice of arithmetic, use of tables of dates, mastery of methods for calculating the dates themselves, explanation of the significance of such data and of the whole order of the cosmos—theologically as well as mathematically', according to W. M. Stevens.[†]

The correct dating of church feasts inevitably leads to the calendrical problem of the leap day, for which the same Roman calendrical date (the sixth kalends of March) was assigned to two consecutive (and otherwise distinct) solar days (hence the Latin term for the intercalary day is *bis-sextus* or 'twice sixth'). So that priests might understand this concept (*hoc non est facile*, as the missal notes), the Leofric Missal manuscript continues (fol. 38r):

> Inquirendum est quare dicitur bisexus. Dicitur bisexus propter his kalendas nominatas. et ut dii quando opugnauit iosue in terra gabaon orauit ad dominum ut staret sol tribus oris in celo, et per optineret uictoriam. Et ita factum est quasi annis singulis ipsi hore

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adcrescunt. Et in tres annos ad quartam faciunt unum diem. Et ipse dies dicitur bisexus duos dies ebdomadis contra unum diem, diem mensis, et contra unum diem lune quasi unus dies reputantur, ut est a uerbi gratia .VI. kalendas hodie .VI. kalendas cras, non primus numeratur sed retro exigitur.

It must be inquired why [this day] is called *bissextus*. It is called *bissextus* because of these dates that were mentioned like the day when Joshua attacked in the land of Gibeon and prayed to the Lord that the sun stand in the sky for three hours and thereby he might gain the victory. And hence it happened that these [three hours] were joined to individual years. And over three years nearing a fourth they make one day. And it is called *bissextus* [because] two days of a [seven-day] week are, as it were, counted as one day against one day, a day of the month, and against this one day; and, for example, today is 6th kalends, tomorrow is 6th kalends—the first [day] is not counted but is pushed backwards.‡

Thus, according to this explanation, Joshua's battle occurred on leap day (*bissextus*) so that the sun 'stood still' only in the equivocal sense that the same date was assigned to two solar days. Note that the Biblical text specifies no such duration of 'three hours', only that the sun 'did not hurry to set' until the end of one day.§ The Leofric Missal's interpretation seems to be that these three hours are called a

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‡ English translation by the author, with revisions and corrections by Bruce Perry and Faith Wallis.

§ *Joshua: A New Translation with Notes and Commentary*, trans. and ed. Robert G. Bolling (Garden City, NJ: Doubleday, 1982), p. 274.

'day' because they 'make one day' when 'joined to individual years' over the course of four years. Though its explanation identifies leap day with the sun's standing still for three hours, *six* hours would be one quarter of the twenty-four that would be accumulated over four years. One speculates that the Leofric Missal was speaking in terms of three hours of daylight, thereby understood as one-quarter of a 'day'. We will shortly return to this question.

On either interpretation, it seems clear that this explanation interprets the Joshua event as the first leap 'day', created by miracle on that occasion but then repeated regularly thereafter. On the other hand, nothing clearly excludes the alternative reading that leap day already existed for Joshua to use on this occasion. But even if this was taken as being the first leap day, that inference is weighty: it implies that the Joshua event goes on recurring and reverberating through subsequent cosmic time, recalled each leap day, rather than being an isolated, singular occurrence. On either reading, a naturalistic explanation is offered for what otherwise seems wholly and spectacularly miraculous. This connection between a seemingly unique miracle and a recurrent phenomenon could also be read as explaining the miracle in terms of that phenomenon. Under such an explanation, Joshua may have decided to reserve battle for that calendrically significant day, presumably so that he could claim divine protection.

This explanation does not occur in any of the other three extant Anglo-Saxon missals.[**] Yet it is confirmed through a critical account in *De temporibus anni* (*On the Seasons of the Year*), probably written around 990 and attributed to Ælfric, abbot of Eynsham (ca. 950–ca. 1010), an exceptionally learned and prolific Old English author. Ælfric addresses this matter head-on in his account of leap year:

[**] Heinrich Henel, ed., *Ælfric's* De temporibus anni, (Oxford: Oxford University Press, 1970), pp. 55, 95–96; see also *Leofric missal*, p. 185, where Orchard notes that it is 'apparently not found elsewhere'.

Some priests [*sume prēostas*] say that the leap year came about because Joshua asked from God that the sun should stand still for the length of one day when he eradicated the heathens from the land that God had given him. It is true that the sun stood still for the length of one day above the city of Gibeon through the prayer of that thane, but the day went forth just like other days, and leap year did not come about through that, though the unlearned think it is so. . . . Roman scholars placed that day in the month we call February because that month is shortest of all the months and also last. Concerning that day the wise Augustine said that the almighty Creator made it at the beginning of the world as a great mystery, and if it was left uncounted, then the whole course of the year would right away go wrong. And it pertains both to the sun and to the moon because there is one day and one night. If you will not count it for the moon as well as for the sun, then you will throw off the Easter rule and the number of the new moon for the whole year.[††]

In this context, Heinrich Henel interprets *prēostas* to mean specifically computists, whose mathematical work here implicitly contrasts with the grammatical studies associated with 'scholars' (*bōceras*).[‡‡] Nicholas Orchard also remarks that the computus accompanying the calendar in the Leofric Missal is 'highly sophisticated', though he was

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[††] *Ælfric's* De temporibus anni, pp. 52–57; the translation cited here is by Peter S. Baker from:
http://faculty.virginia.edu/OldEnglish/aelfric/detemp.html#ret20

[‡‡] *Ælfric's* De temporibus anni, p. 96n1.

not able to decide whether its material had initially been assembled at Glastonbury, Canterbury, or even Winchester, where Ælfric studied.[§§]

Even so, Ælfric distances himself from this 'priestly', computistic interpretation; as a monk, he seems to criticize this opinion of 'unlearned' priests, whereas he himself holds that the sun stood still 'through the prayer of that thane', presumably a miracle beyond the ordinary course of nature. Ælfric takes this singular occurrence to contradict the view of the 'unlearned' who consider the Joshua event occurred on leap day. Further, Ælfric sheds light on this interpretation, which he seems to read as placing the origin of leap day at the Joshua event. In contrast, Ælfric considers that *bissextus* dated back to the Creation, not to the Joshua event, which Ælfric situates on a day that 'went forth just like other days'. This presumably means that he considers that Joshua's miracle did *not* occur on a leap day, though Ælfric could be read as allowing the possibility that it was an 'ordinary' leap day, just not the first such.

This reference to Joshua in Ælfric has no precedent in Bede, whom he acknowledges as his source and who does not mention Joshua or the miracle under consideration.[***] Though Ælfric and Bede both mention 'the wise Augustine', his passage in *De Trinitate* on the *bissextus* notes its importance 'lest the order of the seasons should be upset' without any reference to the Joshua event.[†††]

Here we return to the problem mentioned earlier about the duration of the Joshua event. Bede cites Augustine's assertion that *bissextus*

[§§] *The Leofric Missal*, p. 184; Orchard here comments on what he calls the *B* text.

[***] For their relation, see Aaron J. Kleist, 'The Influence of Bede's *De temporum ratione* on Ælfric's understanding of time', in *Time and Eternity: The Medieval Discourse*, ed. Gerhard Jaritz and Gerson Moreno-Riano (Turnhout: Brepols Publishers, 2003), pp. 81–97; see also Bede, ed. Wallis, *The Reckoning of Time*, pp. 103–11.

[†††] Augustine of Hippo, *The Trinity*, trans. Edmund Hill and ed. John E. Rotelle (Brooklyn: New City Press, 1991), part I, vol. 5, p. 159.

'itself has six hours, for the whole day with its night has 24 hours, whose fourth part, which is a quarter-day, is found to be six hours'.‡‡‡ Bede further comments on 'those who say that only three hours accrue to the *bissextus* every year, as if ascribing nothing to the night, we do not think that their judgment is to be accepted at all. If this were so, the whole day which accumulates would not be complete before the passage of seven years. For even the base herd [*uulgus ignobile*] know that a whole day, that is, [a day] together with its night, has 24 hours'. Having cited this passage in Bede, Ælfric clearly seems to consider it evidence against the three hours adduced in the Leofric Missal, which he takes as showing gross ignorance.

Yet, as Faith Wallace notes, the belief that *bissextus* involves three, rather than six, hours is found in many other and much earlier sources, perhaps beginning with the Pseudo-Cyprian's *De pascha computo* (243 CE) and found thereafter in various later sources that use Biblical texts to 'prove' retroactively the correctness of the three hours.§§§ Accordingly, the question of three versus six hours seems to be a preexisting disagreement about whether the ordinary solar 'day' has 12 or 24 hours. This issue is separable from ascribing the Joshua event to *bissextus*, for which the larger problem may be counting a quarter-day as a 'day'. Here, crucial evidence emerges in the very passage that Bede cites verbatim from Augustine, who argues that 'since it usually happens that the whole is computed from the part', then 'this quarter-day [of *bissextus*] is counted as a day'.**** Whether one interprets that quarter-day as three hours (of daylight) or six (of the whole day), as Augustine and Bede insist, their arguments seems to validate the possibility that, if the Joshua event fell on *bissextus*, it should be counted as 'one day'.

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‡‡‡ Bede, ed. Wallis, *The Reckoning of Time*, pp. 108–9.

§§§ Ibid., p. 324n148.

**** Ibid., p.109.

The reliance of all these accounts on the Roman calendar may seem highly anachronistic for events that presumably occurred long before Roman times (according to modern scholarship, in the Late Bronze Age, around 1550 BCE). Yet Bede and Ælfric were aware of the Hebrew, Greek, and Egyptian calendars. Indeed, the Leofric Missal inscribed the beginnings of the Hebrew and Greek months (among others) into its Roman calendar. Thus, these monastic and computistic sources shared an awareness of different calendars as well as their working assumption to apply Roman dating as their overarching standard.

I am not aware of any other reference to this clever explanation of Joshua's celebrated miracle, whose apparent defiance of the natural order so challenges interpreters. The mid-ninth century Irish Pseudo-Augustine's *De miraculis sacræ scripturæ* does discuss the Joshua miracle in the context of his treatment of solar and lunar cycles, noting specifically that the miracle 'did not disturb anything in the course of the year and of the other days since the sun and the moon passed both together, each in its own order'.[††††] As Marina Smythe notes, in Insular texts, the 'course of the year' may sometimes refer to the computists' calendars, rather than the position of the sun in the sky; thus, if for Joshua the sun had stopped but not the moon, the nineteen-year computistical cycle would have been disrupted.[‡‡‡‡] Yet there is no direct evidence that Pseudo-Augustine intended to say that the Joshua event fell on *bissextus*, considered as part of the ordinary 'course of the year'; he only noted that, though 'the sun and the moon paused both together, each in its own order, . . . they reached thereafter the

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[††††] Marina Smyth, *Understanding the Universe in Seventh-Century Ireland* (Rochester: Boydell Press, 1996), pp. 160–65, quoted at p. 165.

[‡‡‡‡] Ibid., p. 160, notes that the Irish Augustine 'considered the possibility that the moon might have been changing phases while it was standing still during Joshua's battle'.

limit of their setting as though after a normal day', hence presumably not on *bissextus*.

Perhaps other readers will be able to find other mentions of this striking interpretation of Joshua. It already seemed to have faded from sight in the period after the Norman invasion; for instance, about 1119 the Anglo-Norman poet Philippe de Thaon (or de Thaün) wrote a *Livre des Créatures* that treats the *bissextus* extensively without any suggestion that it applied to the Joshua story.[§§§§] In the preceding century, Hrabani's *De computo* (ca. 820) does not include any mention of Joshua in its discussion of *bissextus*.[*****]

Nor, so far as I can tell, has this gloss left any visible trace on modern Biblical exegesis, which certainly has entertained its share of astronomical explanations. Most frequently, these include speculation that Joshua's miracle may have been a solar eclipse, during which 'the sudden disappearance of the last rays of the Sun seems to have an almost hypnotic effect on unsuspecting witnesses, making the very few minutes of totality seem like hours (and thus giving the impression of the Sun standing still in the sky, for a corresponding length of time)'.[†††††] On the other hand, one Biblical scholar noted that 'the most serious problem with such astronomical explanations of the poem is the tension which remains with the meteorological phenomena in verse 11', which recounts that 'on that day the Lord hurled large hailstones down on them from the sky, and more of them died from the

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[§§§§] Thomas Wright, ed., *Popular Treatises on Science Written During the Middle Ages in Anglo-Saxon, Anglo-Norman, and English* (London: R. and J. E. Taylor, 1841), pp. 49–53.

[*****] Rabani Mauri, *Martyrologium; De computo*, ed. John McCulloh (Turnhout: Brepols Publishing, 1978), pp. 266–79.

[†††††] F. R. Stephenson, 'Astronomical verification and dating of Old Testament passages referring to solar eclipses', *Palestine exploration quarterly*, Vol. 107 (1975): p. 119; see also J. F. A. Sawyer, 'Joshua 10:12–14 and the solar eclipse of 30 September 1131 B.C.', *Palestine exploration quarterly*, Vol. 104 (1972): pp. 139–46.

hailstones than were killed by the swords of the Israelites'.[‡‡‡‡‡] By comparison with such theories (or even Galileo's rather tortuous interpretation of Joshua),[§§§§§] this Old English comment gives a cleverly contrived explanation, a notable application of rational astronomy to a celebrated scriptural problem.

[‡‡‡‡‡] *Joshua*, ed. Robert G. Bolling, p. 283.

[§§§§§] *The Galileo Affair: A Documentary History*, trans. and ed. Maurice A. Finocchiaro (Berkeley: University of California Press, 1989), pp. 114–18.