

A MATHEMATICAL CONUNDRUM:
THE PROBLEM OF THE LARGE NUMBERS IN
NUMBERS I AND XXVI¹

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It has long been recognized by O.T. scholars that the figures recorded in the census lists contained in Num. i and xxvi cannot be regarded as an accurate representation of the number of Israelites who came out of Egypt with Moses. The reasons for doubting the historicity of these numbers have often been rehearsed in the relevant literature, and need only be summarized briefly here:

(a) The numbers given are well beyond the bounds of what may be regarded as historically probable.² According to the first census, the total number of males “from twenty years old and upward” (Num. i 3, 18, 20, 22, etc.)³ who came out of Egypt was 603,550 (Num. i 46), a figure which is very similar to the total given in the second census in Num. xxvi 51 (601,730). If, as is generally recognized, males over the age of twenty would have constituted a little more than a quarter of the entire population, then the total number of individuals—including men, women and children—would almost certainly have exceeded two million.⁴ It must be regarded

¹ I am indebted to Dr Hermann Hunger (Vienna), Professor W G Lambert (Birmingham), Dr F Richard Stephenson (Durham) and C B F Walker (London) for their kindness in readily offering assistance on a number of points connected with this article, which is based on a paper read at the winter meeting of the Society for Old Testament Study held at Manchester College, Oxford, in January 1995

² This was ably demonstrated by J W Colenso in his famous book, *The Pentateuch and Book of Joshua Critically Examined*, Pt 1 (London, 1862), pp 31 ff, Pt 2 (London, 1871), pp 499 ff. For a discussion of Colenso's contribution, see J W Rogerson, *Old Testament Criticism in the Nineteenth Century, England and Germany* (London, 1984), pp 220 ff

³ For an analysis of this formula in the context of the census, see G Brin, “The Formulae ‘From and onward/upward (*m whl²h/wm²lh*)’”, *JBL* 99 (1980), pp 161 ff

⁴ N K Gottwald, *The Tribes of Yahweh: A Sociology of the Religion of Liberated Israel, 1250-1050 B C E* (Maryknoll, New York, 1979; London, 1980), p 51, estimates that 600,000 arms-bearing males would yield a total population of at least

as inherently improbable that such a vast population could have found subsistence in the wilderness of Sinai for any length of time,⁵ and it is difficult to comprehend how such a multitude could have encamped around the tabernacle in the neat formation suggested in Num. ii, or marched together in the orderly manner related in Num. xxxiii.⁶

(b) The numbers are inconsistent with those encountered elsewhere in the O.T. relating to the size of the Israelite tribes (cf. Gray, p. 14). For example, according to Josh. iv 12-13, the tribes of Reuben, Gad and half Manasseh totalled 40,000, whereas these three tribes totalled 124,350, according to the first census, and 110,580 according to the second census. Moreover, Judg. v 8 indicates that six of the Israelite tribes (viz., Benjamin, Ephraim, Manasseh, Naphtali, Zebulun and Issachar) yielded an estimated 40,000 fighting men, whereas in Num. i the census total for these six tribes was 273,000, and in Num. xxvi it was 301,000.⁷ Further, Judg. xviii implies that 600 armed men formed the bulk of the tribe of Dan, yet, according to Num. i 39, this tribe consisted of a total of 62,700 men, and according to Num. xxvi 43 it consisted of

2,500,000, a figure which he regards as "ridiculously excessive" and one which would be "far larger than the highest estimates for the most populous periods of ancient Israel under the late monarchy"

⁵ Cf B Baentsch, *Exodus-Leviticus-Numeri* (Gottingen, 1903), p 446, A Dillmann, *Die Bucher Numeri, Deuteronomium und Josua* (Leipzig, 1886), pp 5-8, G B Gray, *A Critical and Exegetical Commentary on Numbers* (Edinburgh, 1903), pp 12-15 Some scholars object that this argument does less than justice to the traditions contained in the O T regarding the miraculous feedings in the wilderness (cf , e g , E J Young, *An Introduction to the Old Testament* [London, 1949], p 89), and fails to take account of the fact that the Sinai peninsula was more fertile in ancient times However, conditions of life in the peninsula have not varied appreciably over the centuries, and it is most unlikely that the region at the time of the exodus would have been capable of supporting more than its present estimated population of approximately 15,000, and not even a fraction of this number if encamped for even a few days at any one location

⁶ The absurdity of such large numbers participating in the exodus is well illustrated by the comment of N H Snaith, "Numbers", in M Black and H H Rowley (ed), *Peake's Commentary on the Bible* (London, 1962), p 254 "When on the march, they would constitute a column twenty-two miles long, marching fifty abreast with one yard between each rank " H L Strack (*Die Bucher Genesis, Exodus, Leviticus und Numeri* [Munich, 1894], p 213) suggests that the two million may have left Egypt at different times and in smaller groups, rather than simultaneously and *en masse*, but this is an inference which finds no support in the biblical text

⁷ Cf J Wellhausen, *Prolegomena zur Geschichte Israels* (Berlin, 1899^s), pp 353-4, E tr *Prolegomena to the History of Israel* (Edinburgh, 1885), p 348

64,400. In addition to these inconsistencies relating to specific numbers, it is perhaps worth noting that the high census figures of Num. i and xxvi are incompatible with the more general statements in the Pentateuch which represent the Israelites who fled from slavery in Egypt as too few in number to occupy effectively the land of Canaan (cf. Exod. xxiii 29-30; Deut. vii 7, 22), and, as many commentators have observed, it is by no means clear how one small clan of seventy persons (cf. Gen. xvi 26-7; Exod. i 1-7) could have increased so dramatically in the course of a few hundred years,⁸ or how two midwives (Exod. i 15) would have been sufficient to serve the needs of the entire Hebrew community.⁹

(c) While there is an inner consistency in the numbers themselves as presented in Num. i and xxvi, in the sense that the grand totals in each case correctly represent the sum total of the individual tribes, the numbers are incompatible with other computations found in the Priestly sections of Numbers which relate to the size of the Israelite population. For example, Num. iii 43 gives the number of first-born Israelite males as 22,273; if we assume that the number of female first-born was approximately the same, the total number of first-born among the Israelites would have been 44,546. This number, however, seems disproportionately small, given a population of over two million, for it would mean that every Israelite family must have had, on average, some fifty children. A further anomaly arises if the number of first-born referred only to the first-born of the mother (cf. Num. iii 12), rather than the eldest child of the father (who may have had several wives), for on this reckoning there would have been 44,546 mothers among the Israelites; on the assumption that the number of women over the age of twenty was the same as the number of men (i.e., approximately 600,000), this would yield the improbable situation that only about one in fifteen women of marriageable age had any children.

⁸ A Lucas ("The Number of Israelites at the Exodus", *PEQ* 76 [1944], p. 167), on the basis of the population growth in modern Egypt, estimates that the seventy Israelites mentioned in Gen. xvi 27 and Exod. i 5 could have increased to 10,363 people at most in the space of 430 years (Exod. xii 40-1).

⁹ The view that the two midwives in question were, in fact, supervisors over an "obstetrical guild" (so, e.g., G. L. Archer, *A Survey of Old Testament Introduction* [Chicago, 1964], p. 236) cannot be sustained, since it finds no support in the biblical text.

Clearly, then, there are insuperable difficulties in accepting the figures given in Num. i and xxvi as a correct representation of the number of Israelites who came out of Egypt. It is not surprising, then, that various attempts have been made by scholars to explain these improbably high computations, and the purpose of the present article is to examine in detail some of the solutions which have been proposed.

I

The most ingenious attempt to explain the large numbers of Israelites was undoubtedly that offered by H. Holzinger,¹⁰ who interpreted the figures by means of the principle of *gematria*, a system by which each letter of the Hebrew alphabet was given a specific numerical value.¹¹ The first ten letters of the alphabet represented the numbers one to ten, the next ten letters represented the number of tens, and the remaining letters the number of hundreds. On the basis of this system, Holzinger calculated that the numerical value of the letters in the Hebrew phrase *be'ne-yisra'el* (Num. i 2), when added together (viz., 2 + 50 + 10 + 10 + 300 + 200 + 1 + 30) yields the sum of 603, which represents the total, in thousands, of those counted in the first census (603,550; cf. Num. i 46). With regard to the remaining 550, Holzinger suggested two possibilities: (i) the letters in the clause *kol-zakar lekol-yose' sabā'* (cf. Num. i 2, 45) yield a numerical value of 551, which can be reduced to the requisite 550 if Moses is discounted; (ii) the Samaritan text suggests reading *lesb'otām* ("company by company") in Num. i 45 (instead of *lebēt' otām*) which yields the sum of 563, or 550 if Moses and his twelve assistants are discounted. The sum total of 601,730 in the second census (Num. xxvi 51) is derived, on the same principle, from the phrases *kol-rā'sīm* (= 601; i.e., 20 + 30 + 200 + 1 + 300 + 10 + 40) and *wekol-peqūde'adat* (= 730; i.e., 6 + 20 + 30 + 80 + 100 + 6 + 4 + 10 + 70 + 4 + 400).

Although Holzinger's suggestion has been accepted by some

¹⁰ *Numeri* (Tubingen and Leipzig, 1903), pp 5-6, 134

¹¹ See F Dornseiff, *Das Alphabet in Mystik und Magie* (Leipzig and Berlin, 1922), pp 91 ff, F X Kugler, "Ratselhafte Riesen Zahlen im A T", *Stimmen der Zeit* 109 (1925), pp 26 ff, R Hallo, "Über die griechischen Zahlbuchstaben und ihre Verbreitung", *ZDMG* N F 5 (1926), pp 55 ff, G Scholem, "Gematria", *Enc Jud* 7 (Jerusalem, 1971), cols 369-74, S Sambursky, "On the Origin and Significance of the Term Gematria", *JJS* 29 (1978), pp 35-8

scholars,¹² his theory is not without its difficulties. In the first place, it is by no means certain that the system of *gematria* was known in Israel prior to the Hellenistic period,¹³ and there is certainly no clear example of the system at work in the O.T.¹⁴ Secondly, Holzinger was unable to explain by the system of *gematria* how the figures were calculated for the individual tribes in either census, and he was forced to concede that these numbers were probably a purely artificial construction. Finally, his attempt to obtain the numbers 550 and 730 seems particularly arbitrary and contrived, and the fact that P. Heinisch¹⁵ was able to obtain the number 550 from yet another phrase (viz. *rōš kol-*, without the quiescent *aleph*; cf. Num. i 2) suggests that practically any number can be conjured up, provided one chooses the correct phrase. It is hardly surprising, therefore, that Holzinger's theory has generally met with little scholarly approval, and it may safely be concluded that the supposed correspondence between the totals in Num. i and xxvi and the numerical value of various phrases in these two chapters is no more than a mere coincidence.

II

A different explanation of the numbers contained in Num. i and xxvi was advanced by W.F. Albright.¹⁶ He argued that the two lists

¹² Cf. e.g., A Bentzen, *Introduction to the Old Testament* 2 (Copenhagen, 1948), p. 34, E Sellin, *Einleitung in das Alte Testament* (10th edn, completely revised and rewritten by G. Fohrer [Heidelberg, 1965], p. 200, E. tr. *Introduction to the Old Testament* [London, 1970], p. 184).

¹³ Cf. M. Noth, *Das System der zwölf Stämme Israels* (Stuttgart, 1930), pp. 131-2, who argues that the system was first used in Israel no earlier than the 2nd century B.C., probably under Hellenistic influence.

¹⁴ The Midrash (*Beresheet Rabba* §42) implies that the sum of Abraham's slaves (318) was derived from the numerical value of the name Eliezer in Gen. xv 2 (cf. E. Nestle, "318 = Eliezer", *ExpT* 17 [1905], pp. 44-5), but this explanation of the number is by no means certain (cf. H. Gunkel, *Genesis* [Göttingen, 1910³], p. 283). G. R. Driver ("Abbreviations in the Massoretic Text", *Textus* 1 [1960], pp. 126-7, "Once again Abbreviations", *Textus* 4 [1964], p. 83) claims that examples of *gematria* may also be found in 1 Sam. xiii 1, 2 Kgs. ii 24 and Ezek. iv 5, 8, but the use of the system is by no means clear in these texts, and D. Kellermann (*Die Priesterschrift von Numeri 1, 1 bis 10, 10—literarkritisch und traditionsgeschichtliche untersuchung* [Berlin, 1970], p. 161) is probably correct in asserting that Rev. xiii 18 is the earliest certain biblical example of *gematria*.

¹⁵ *Das Buch Numeri* (Bonn, 1936), pp. 17-18, idem, *Das Buch Exodus* (Bonn, 1934), p. 105.

¹⁶ "The Administrative Divisions of Israel and Judah", *JPOS* 5 (1925), pp. 20 ff., idem, *From the Stone Age to Christianity* (Baltimore, 1946), p. 222.

were garbled versions of the same original.¹⁷ Both lists probably had a long and complicated history before reaching the hands of the Priestly editor, and since they would have been copied by a succession of scribes, it was inevitable that two divergent recensions should finally be produced. According to Albright, the data contained in these lists must have had a basis of some kind, and since no census could well have been made before the reign of David (cf. 2 Sam. xxiv 1-9), and there is no record of any having been made after, the conclusion seems inescapable that the numbers contained in Num. i and xxvi must originally have related to the census taken at the beginning of the period of the monarchy.¹⁸ In the course of time, the numbers became dislocated from their original context, and by some accident or misunderstanding, became erroneously ascribed to the tribes which existed at the time of Moses.

Support for this theory is found in a comparison of the figures provided by the census lists in Numbers with those encountered elsewhere in the O.T. in connection with the census of David. The results of this census are recorded, first, in 2 Sam xxiv 9, which reports that the number of warriors in Judah at this time was

¹⁷ Pp 21-2, n 12 offers the following tentative reconstruction of the original form of the two census lists

	Num 1		Num xxvi	
Reuben	46,500		43,730	(46,500) ^d
Simeon	59,300	(22,200) ^a	22,200	
Gad	45,650	*(40,500) ^b	40,500	
Judah	74,600		76,500	(73,730) ^d
Issachar	54,400		64,300	(54,400) ^{e-g}
Zebulun	57,400		60,500	
Ephraim	40,500	*(45,650) ^b	32,500	*(45,600) ^f
Manasseh	32,200	(69,300) ^a	52,700	(64,300) ^{e-g}
Benjamin	35,400	(31,500) ^c	45,600	*(32,500) ^f
Dan	62,700		64,400	(62,700) ^{e-g}
Asher	41,500	(45,400) ^c	53,400	*(45,400) ^h
Naphtali	53,400		45,400	*(53,400) ^h

The numbers in parentheses represent the results of transposition, either simple, in which case the parentheses are marked with asterisks, or complex, where the transposition has occasioned a change in at least one of the digits. According to the above reconstruction, the numbers given for seven of the tribes would be exactly the same in the two census lists.

¹⁸ So, too, A T Olmstead, *History of Palestine and Syria* (London, 1931), p 330, G E Wright, *An Introduction to Biblical Archaeology* (London, 1960), pp 41-2, J Liver, "The Bible and its Historical Sources", in B Mazar (ed), *The World History of the Jewish People 2* (Jerusalem, 1970), p 57 Cf, already, Dillmann (n 5), p 7

500,000, while those in Israel amounted to 800,000 (i.e., a grand total of 1,300,000 warriors in all). The numbers given for this census by the Chronicler, however, are different and were obtained, according to Albright, from some other (but respectable) source. 1 Chr. xxi 5 gives the number of warriors in Judah as 470,000, and the number in Israel as 1,110,000, and these totals evidently excluded the tribes of Levi and Benjamin. In the Numbers lists (as reconstructed by Albright) the three tribes of Judah (i.e., Judah, Simeon and Benjamin) total approximately 128,000 (or 130,000 in round numbers), and the nine tribes of Israel proper total approximately 470,000. The latter number is precisely that assigned to Judah by the Chronicler's source, while the source in 2 Samuel has rounded off the number in Judah to 500,000. The Chronicler assigns to Israel 1,110,000, i.e., 500,000 more than the total for *all* Israel in Numbers (600,000). The most plausible explanation for this, in Albright's view, is that a confusion must have arisen between the total for "Israel" (= Israel *and* Judah) and that for "Israel" (= the northern kingdom). Instead of taking the sum of 600,000 in the Numbers lists to be the combined population of Israel and Judah, some writer mistakenly took it to refer to the northern kingdom only, and inferred that the other available number, i.e. 470,000 (or 500,000 in round numbers) must have belonged to the other section of "Israel", i.e. Judah, thus giving a grand total of 1,110,000 as the combined population of the northern and southern kingdoms. The same error was subsequently repeated by the Chronicler himself, who took the sum of 1,110,000 to refer to the northern kingdom only, and assumed that the number 470,000 must represent the population of Judah. According to Albright, the coincidence in these mathematical additions is so striking "that we cannot well avoid combining the Chronicler's figures with those in Numbers" (p. 24).

However, this attempt to derive the census numbers recorded in 1 Chr. xxi 5 from the totals in the census lists in Numbers seems contrived and unnecessarily complicated, for it is based on the dubious assumption that two separate writers must coincidentally have perpetrated precisely the same error, and it involves an unwarranted tinkering with the numbers as presented in Num. i and xxvi. If the reading of the MT is accepted, the nine tribes of Israel proper amount to a total of 434,200 (in the first census) and 457,430 (in the second census), and this seems far removed from

the total of 470,000 (and even further removed from the total of 500,000) which is necessary for Albright's hypothesis to be sustained. In fact, there is no reason at all to refer to the lists in Numbers in order to explain the Chronicler's computation for the Davidic census, for it seems far more probable that his calculation was derived directly from 2 Sam xxiv 9. The figure which he gives for all Israel, viz., 1,100,000, was obtained simply by adding the numbers given for Israel (800,000) and Judah (500,000) in 2 Sam. xxiv 9, and subtracting from the total of 1,300,000 the sum of 200,000 for the two tribes (Levi and Benjamin) that were not counted in the census.¹⁹ The separate figure given for Judah in 1 Chr. xxi 5b has every appearance of being a later gloss,²⁰ for the expression "all Israel" elsewhere in Chronicles refers to the entire population, not just the northern tribes.²¹

Another major difficulty with Albright's thesis is that the numbers given in the two census lists (i.e., approximately 600,000 men over twenty years old) implies a total population of over two million, but this would be far too high for the period of the united monarchy, for it is most unlikely that the inhabitants of Israel at this time would have numbered far in excess of a million.²²

¹⁹ As H G M Williamson (*1 and 2 Chronicles* [London and Grand Rapids, 1982], p 145) notes, the Chronicler usually regards Ephraim and Manasseh as separate tribes, and he would therefore have reckoned with thirteen tribes in all (including Levi). The sum total given in 2 Sam xxiv 9 (1,300,000) would thus have suggested to him an average of 100,000 per tribe, and so it would have been natural for him to have deducted 200,000 for Levi and Benjamin. Cf R Braun, *1 Chronicles* (Waco, Texas, 1986), pp 217-18.

²⁰ So, e.g., E L Curtis and A A Madsen, *The Books of Chronicles* (Edinburgh, 1910), p 250, W Rudolph, *Chronikbücher* (Tübingen, 1955), p 144.

²¹ Cf H G M Williamson, *Israel in the Books of Chronicles* (Cambridge, 1977), pp 87 ff.

²² Any attempt to estimate the population of Israel in the pre-exilic period is fraught with difficulties, owing to the lack of accurate statistics available (cf Y Shiloh, "The Population of Iron Age Palestine in the Light of a Sample Analysis of Urban Plans, Areas, and Population Density", *BASOR* 239 [1980], p 32). On the basis of the account contained in 2 Kgs xv 19-20 concerning Menahem's tribute to Tiglath-Pileser III, R de Vaux (*Les Institutions de l'Ancien Testament I* [Paris, 1958], p 104, E tr *Ancient Israel Its Life and Institutions* [London, 1961], pp 65-6) calculates that there were approximately 800,000 inhabitants in the kingdom of Israel in the latter half of the 8th century B C, and he estimates that the number would scarcely pass the million mark even with the addition of Judah. C G McCown ("The Density of Population in Ancient Palestine", *JBL* 66 [1947], p 434) estimates the combined population of Israel and Judah in the 8th century B C to be approximately 900,000. S W Baron (*Enc Jud* 13 [Jerusalem, 1971], col 869) gives a higher estimate (between 1,100,000 and 1,350,000) but this seems a little excessive.

Albright, aware of this difficulty, was forced to assume that the sum of 600,000 would have included the entire population of men, women and children, but such an interpretation goes against the explicit statements contained in Num. i 3 and xxvi 2, which make it quite clear that this number comprised only men of military age.

III

A different approach to the high numbers contained in the two census lists of Num. i and xxvi has been advocated by M. Barnouin,²³ who argued that some striking affinities exist between the census figures recorded in these two chapters and various calculations found in Babylonian astronomical texts. According to this theory, the census figures, when divided by 100, can be related to specific planetary periods calculated by the Babylonian astrologers. The clearest example of such a correlation is found in the case of the Benjaminites, whose total in the first census comprised 35,400, i.e. 100 times a short lunar year (354 days). Other cases are more complicated, and involve adding together, or subtracting, various numbers in the census lists. For example, the number given for Ephraim in the first census ($40,500 \div 100 = 405$) added to the number given to this tribe in the second census ($32,500 \div 100 = 325$) gives a total of 730, which is exactly twice the length of the solar year (365 days). Again, in the first census, the combined totals of Issachar ($54,400 \div 100 = 544$) and Ephraim ($40,500 \div 100 = 405$) is 949 as, indeed, are the combined totals of Manasseh ($32,200 \div 100 = 322$) and Dan ($62,700 \div 100 = 627$), and of Naphtali ($53,400 \div 100 = 534$) and Asher ($41,500 \div 100 = 415$), and this number corresponds to the sum of the Babylonian solar year (365) + the Period of Venus (584). Other examples cited by Barnouin involve even more complicated mathematical computations. For example, he notes that in the second census the sum total of Naphtali (454) + Benjamin (456) + Dan (644) + Ephraim (325) is 1,879, which corresponds exactly to the sum total of the planetary periods of Mercury (116) + Venus (584) + Mars (780) + Jupiter (399). By making the tribal totals correspond to the celestial movements of the planets, the Priestly writer was able to represent Israel

²³ "Les recensements du livre des Nombres et l'astronomie babylonienne", *VT* 27 (1977), pp. 280 ff.

as Yahweh's terrestrial army, just as the astral bodies were regarded as his celestial host (cf. Gen. ii 1; Deut. xvii 3).

Barnouin's theory, however, although sympathetically received by some recent commentators,²⁴ must be viewed with considerable reserve. In the first place, in order to sustain his thesis, Barnouin is compelled to argue that there were various stages in the evolution of the numbers in each census list and that, in their original form, both lists were slightly different from those preserved in the extant text of Numbers.²⁵ He maintains that, originally, the sum total of the twelve tribes in each census was exactly 6,000 (which Barnouin regards as a significant number in the sexagesimal system adopted by the Babylonian mathematicians) and that this was then multiplied by 100 to give the figure of 600,000 in each census (cf. Exod. xii 37; Num. xi 21). This figure was increased to 603,550 in the first census by inflating the number in the tribe of Gad (the only tribe in this census whose number is not divisible by 100) from 42,100 to 45,650; in the second census, the round figure of 600,000 was increased to 601,730 by inflating the number in the tribe of Reuben (the only tribe in the second census whose number is not divisible by 100) from 42,000 to 43,730. But, as was the case with Albright's theory, such numerical juggling merely serves to undermine the validity of the argument which is being presented. Moreover, Barnouin's method of selecting some of the planetary periods for his calculations, while omitting others, seems entirely arbitrary and artificial. Thus, for example, in order to obtain the figure of 1,879, he combines the totals of Mercury, Venus, Mars and Jupiter but is forced to omit the period of Saturn (378). Such a blatant attempt to manipulate the numbers of the planetary periods so that they are made to correspond to some preconceived total simply cannot be justified. It may also be noted that the supposed calendrical association with the census figures is, at times, extremely obscure, and the complexity of the mathematical calculations presented by Barnouin inevitably casts doubt on the plausibility of his overall thesis. It may well be that the Israelites attached a certain mystique

²⁴ Cf G J Wenham, *Numbers* (Leicester, 1981), pp 64-6, J Milgrom, *The JPS Torah Commentary Numbers* (Philadelphia and New York, 1990), p 338

²⁵ M Barnouin, "Remarques sur les tableaux numériques de livre des Nombres", *RB* 76 (1969), p 356

to some numbers which had calendrical associations (e.g., 365),²⁶ but it seems doubtful whether such complex computational procedures as those outlined above can be regarded as underlying the numerical data found in the two chapters here under consideration.

Further, it is by no means clear that the Babylonians had succeeded in calculating the synodic periods of the planets by the time of the Priestly writer. There is widespread agreement among O.T. scholars that the Priestly source should be dated in the exilic or early post-exilic period,²⁷ but there is no evidence that the Babylonians were aware of the synodic periods until as late as the 4th century B.C.²⁸ Certainly, the Babylonian astronomical table texts, which presuppose knowledge of these periods, date only from the last three centuries B.C., although it seems that some interest in the times of the disappearance and reappearance of the planets is attested earlier.

Finally, Barnouin's theory is based on the premise that 6,000 was the peak of the sexagesimal system, but it patently was not. In fact, the normal sexagesimal system involved calculating from 1 to 10, and then, alternatively, in sixes and tens: 10-60-600-3,600-36,000, etc. This was the conventional counting system of the Sumerians,²⁹ and since it was Sumerian scholarship that passed down to the Babylonians in due course, this was the system which they adopted for learned purposes, including astronomy (though their own ordinary counting system was decimal). The method of calculation to which Barnouin refers (i.e., using 6,000) represents a variant system, known from documents dating from the Old Akkadian period (c. 2,300-2,200 B.C.). While it is possible that some of the most learned Babylonian scribes of the first millennium B.C. would

²⁶ It is possible, for example, that the number of years of Enoch's life in Gen v 23 (365) was suggested by the number of days in the solar year, cf M Barnouin, "Recherches numériques sur la généalogie de Gen V", *RB* 77 (1970), pp 347 ff

²⁷ Cf my forthcoming commentary, *Numbers* (London and Grand Rapids), pp xlix-l

²⁸ So F R Stephenson and H Hunger, though the latter concedes that the synodic periods may already have been known to the Babylonians in the 5th century B C C B F Walker suggests that such knowledge would first have been available to the Babylonians at about 400 B C I am grateful to these three scholars for permitting me to quote their opinions on this matter, which they were kind enough to express to me in personal communications

²⁹ Thus, Sumerian has no single word for 100 or 1,000, the sum of 100 in Sumerian would have to be expressed as 60 + 40 Cf F Thureau-Dangin, *Esquisse d'une histoire du système sexagésimal* (Paris, 1932), pp 24-5

have been able to read and understand original copies of Old Akkadian texts (and may thus have been familiar with this alternative system of calculation), the possibility of an Israelite author being acquainted with this system seems extremely remote.³⁰ In brief, it has yet to be demonstrated convincingly that the Priestly writer would have had the requisite knowledge and background to have made the necessary arithmetical calculations, and it is most unlikely that his contemporaries would have been sufficiently familiar with astrological lore to have realized that a correlation was supposed to exist between the numbers recorded in the census lists and the Babylonian astronomical periods.

IV

A novel interpretation of the census numbers was advanced by Sir W.M. Flinders Petrie,³¹ who argued that in the two lists contained in Num. i and xxvi the Hebrew word ³*elep* (usually rendered as “thousand”) originally meant “family” or “tent group”. Understood in this way, the purpose of the lists contained in Num. i and xxvi was to give the number of families or tent-groups in each tribe followed by the number of individuals in each family. Thus, for example, the tribe of Simeon in the first census consisted of fifty-nine families and comprised a total of 300 individuals (i.e., there were, on average, approximately five members in each family). According to Petrie’s reckoning, the average number of individuals in each family in the first census would have ranged from five at the least (Simeon) to fourteen at the most (Gad). By applying this principle throughout the lists contained in Num. i and xxvi, Petrie was able to reduce the incredibly high numbers in these chapters to more manageable proportions, since the sum total for the tribes in the first census would be 598 families, comprising 5,550 individuals, and the sum total in the second census would be 596 families comprising 5,730 individuals. Petrie maintained that a later scribe must have misunderstood the significance of the word ³*elep* in the census lists, and instead of interpreting it to mean

³⁰ I owe this observation to Professor W G Lambert I am also grateful to him for drawing my attention to the work of Thureau-Dangin, cited in the previous note

³¹ *Researches in Sinai* (London, 1906), pp 207 ff , idem, *Egypt and Israel* (London, revised edn 1923), pp 40 ff

family, and adding up the families separately from the hundreds, he took the word to mean "thousand", and thus ended up with the enormous figures encountered in Num. i 46 and xxvi 51.

Petrie's theory, however, is flawed at several points. In the first place, while the term *'elep* can certainly designate a "clan" or "sub-division of a tribe",³² it is by no means clear that the word was used to refer to a social unit as small as the "family" or "tent group" (cf. Albright, 1925 [n. 16], pp. 20-1, n. 10). On the contrary, the term *'elep* in the O.T. appears sometimes to be interchangeable with the term *mišpāhā* (cf. 1 Sam. x 19, 21), and it is clear from Josh. vii 14 that the *mišpāhā* was a unit which was larger than the household.³³ Indeed, the word *'elep* occasionally appears to be used as a synonym for "tribe" itself (cf., e.g., Num. i 16). But even if Petrie's interpretation of the term *'elep* in Num. i and xxvi were correct, the "hundreds" should strictly be taken to refer only to males who were "twenty years old and upward" and who were "able to go forth to war" (Num. i 3, xxvi 2), in which case the total number of Israelites (including women, Levites and males under the age of twenty) would, it is estimated, still have reached the staggeringly high figure of approximately 28,000 (cf. Lucas [n. 8], p. 166). Petrie was thus forced to assume that the hundreds in both census lists included the entire population, and not merely the men of military age; but such an assumption is surely unwarranted, for it does less than justice to the explicit statements contained in Num. i 3 and xxvi 2. Further, if Petrie's theory were applied to Num. xvi 49, where it is reported that 14,700 Israelites died as a result of the plague, it must be supposed that the fourteen "families" (*'elep*) in question comprised 700 individuals, but this would yield the improbable situation that there were fifty members in each family. Moreover, if the principle advocated by Petrie were applied to the census of the Levites in Num. iii 21-4, his theory would be undermined even further, for the relation of families to individuals in the case of the Levites would be extremely high compared with the ratio operative for the secular tribes.³⁴

³² Cf. Josh. xxii 14, 21, 30; Judg. vi 15; 1 Sam. x 19, xxiii 23; Isa. 1x 22(?); Mic. v 1 and possibly Ps. lxxviii 18; Zech. ix 7, xii 5-6.

³³ Cf., further, F.I. Andersen, "Israelite Kinship Terminology and Social Structure", *The Bible Translator* 20 (1969), p. 35.

³⁴ Cf. Wenham (n. 24), p. 63. In order to counter this difficulty, Petrie (*Researchers in Sinai*, pp. 215-16; idem, *Egypt and Israel*, p. 46) argued that the list of

A modified version of Petrie's theory was advocated by G.E. Mendenhall.³⁵ Mendenhall's argument also hinged on the meaning of the Hebrew term *ʿelep* in Num. i and xxvi, but, whereas Petrie had understood the word to refer to a social unit, designating a "family" or "tent-group", he argued that it was a military term, designating a "contingent", "troop" or "fighting unit". Thus the census lists of Num. i and xxvi gave for each tribe the number of "contingents" or "fighting units", followed by the number of individuals in each unit who were capable of bearing arms. On this view, the first census would have indicated that the tribe of Reuben, for example, consisted of 46 troops with a total of 500 men; i.e., there would be approximately eleven men in each troop. The twelve tribes, together, would therefore have provided 598 units consisting of a total of 5,550 men (according to the first census) or 596 units consisting of a total of 5,750 men (according to the second census);³⁶ thus each troop would have comprised, on average, nine or ten men. According to Mendenhall, later scribes, unfamiliar with the terminology of ancient Israel's military organization, misunderstood the term *ʿelep* to mean "a thousand", and consequently wrongly calculated the totals in Num. i 46 and xxvi 51. By arguing that the lists were concerned with the number of fighting men among the Israelites, as opposed to the entire population (as Petrie had supposed), Mendenhall maintained that he was doing full justice to the general context of Num. i and xxvi, for it is clear from i 3 and xxvi 2 that both census lists were intended to have a military purpose; at the same time, Mendenhall was able to reduce considerably the high numbers contained in the two lists and produce figures which he believed might plausibly reflect the

Levites originated from a period soon after the conquest of Canaan, when the population had greatly increased, consequently, it was to be treated separately from the two census lists of Num. i and xxvi, which were the products of the Mosaic age

³⁵ "The Census of Numbers 1 and 26", *JBL* 77 (1958), pp. 52-66

³⁶ It should be noted that Mendenhall (p. 62) accepts the reading of the LXX (43,750) instead of the MT's 43,730 in Num. xxvi 7, and thus he calculates the total in the second census as 5,750 rather than 5,730. For a discussion of the fluctuations between the MT and LXX with regard to the numbers contained in Num. xxvi, see U. Quast, "Zahlen und Zahlenreihen in Numeri 26", in A. Pietersma and C. Cox (ed.), *De Septuaginta: Studies in Honor of John William Wevers on his sixty-fifth birthday* (Mississauga, Ontario, 1984), pp. 103 ff.

size of Israel's military strength during the period to which the lists probably belonged.³⁷

Mendenhall's thesis has been welcomed by several scholars as providing a satisfactory solution to the intolerably high numbers contained in Num. i and xxvi,³⁸ and his theory has been applied by some commentators to the large numbers found elsewhere in the O.T., such as those in 1 and 2 Samuel³⁹ and 1 and 2 Chronicles.⁴⁰ However, Mendenhall's theory, although superficially attractive, is beset by many difficulties.

In the first place, while there is ample evidence that the term *ʿelep* can refer to a tribal sub-division (see above, n. 32), it is by no means clear that this term was used specifically to designate a fighting unit levied from a particular tribe. The fact that the term *ʿelep* sometimes appears in military contexts does not in itself prove that it was a technical military term, and that it can be defined, in Gottwald's phrase ([n. 4] p. 270), as a "*mushpāhāh* in arms".

Secondly, on Mendenhall's hypothesis, some of the fighting units envisaged in Num. i and xxvi would have been extremely small, and none can be said to have represented a particularly formidable contingent. For example, each unit in the tribe of Simeon would have consisted (according to the first census) of just five men, as would each unit in the tribe of Issachar according to the second census. Indeed, the largest unit in the first census (Gad) would have consisted of only fourteen men, and the largest unit in the second census (Reuben) would have consisted of only seventeen men. Mendenhall (pp. 64-5) seeks to counter this objection by claiming that extra-biblical evidence dating from the Middle and Late Bronze Ages concerning the size of fighting units in the ancient Near East supports his theory, for there is evidence that in Mari

³⁷ Mendenhall (p. 62, n. 53) initially dated both lists to the period of the Judges, and suggested that they belonged to the Philistine crisis shortly after the time of Gideon. In a later publication, however, he amended his position and dated the two census lists to the period of Saul and the early Israelite monarchy ("Social Organization in Early Israel", in F. M. Cross et al. [ed.], *Magnalia Dei: The Mighty Acts of God, Essays on the Bible and Archaeology in Memory of G. Ernest Wright* [Garden City, 1976], pp. 147-8).

³⁸ Cf. M. Noth, *Das vierte Buch Mose, Numeri* (Göttingen, 1966), pp. 22 ff. (E tr. *Numbers* [London, 1968], pp. 21-2), Gottwald (n. 4), pp. 51, 242 ff.

³⁹ Cf. R. P. Gordon, *I & II Samuel: A Commentary* (Exeter, 1986), pp. 93, 124, P. Kyle McCarter, *I Samuel* (Garden City, 1980), pp. 271, 405.

⁴⁰ Cf. J. M. Myers, *I Chronicles* (Garden City, 1986), pp. 98-9.

and Alalakh, for example, comparatively small contingents consisting of fewer than twenty men were by no means unknown. But the examples cited by Mendenhall can hardly be regarded as typical, and the norm in Mari was that the fighting units consisted of groups of two hundred, or more, men.⁴¹ Further, while a particularly small contingent in Israel may, on occasion, have consisted of just ten men (cf. Exod. xviii 21; Deut. i 15), the overwhelming evidence of the O.T. is that the military units were usually divided into much larger groups, consisting of fifties, hundreds and thousands (cf. Num. xxxi 14, 48, 52, 54; 1 Sam. viii 12, xxii 7; 2 Sam. xviii 1, 4, etc.).

Thirdly, it is difficult to explain, on Mendenhall's hypothesis, why the relative size of the fighting units should diverge so widely between the census recorded in Num. i and that recorded in Num. xxvi. For example, according to Num. i, Simeon would have had just five men per unit, but according to Num. xxvi, the same tribe would have had nine men per unit. If both lists are early and belong to approximately the same period,⁴² why should the size of the units vary so much in such a relatively short space of time? Further, there is considerable variation between the size of the units even within the same census. For example, according to Num. i the 59 units of Simeon contain 300 men liable to be called up, while Gad had far fewer units (forty-five) but had to produce far more warriors (650). As P.J. Budd has remarked, "Why a Simeonite unit should consist of five men and a Gadite of fourteen has not been adequately explained."⁴³

Fourthly, the high numbers are equally problematic in the case of the Levitical census recorded in Num. iii 14-39, but *ʿelep* can

⁴¹ Thus, e.g., Shamshi-Adad, on one occasion, requested from Yasmah-Adad a total of six thousand troops to be mustered in units of between 200 and a thousand men (*ARM I* 42 26-42). A fighting unit consisting of 400 men is mentioned in *ARM I* 23 10, 17, 23, while one of 500 men appears in *ARM I* 23 5, and one of 700 men is reported in *ARM V* 1 4. Reinforcements might be dispatched in units of 500 (*ARM V* 18 5) or 700 (*ARM V* 50 9) men, while soldiers serving guard duty tended to be in units of 400 (*ARM I* 1 11) or 500 (*ARM V* 1 8, 10).

⁴² Mendenhall (p. 63, n. 53) contends that the two census lists contained in Num. i and xxvi "certainly cannot be very far apart in time". He argues that the list contained in Num. xxvi was probably the later of the two, since this reflected a tendency towards slightly larger units. On the other hand, Noth ([n. 13] pp. 7 ff., 122 ff.) argues that the list contained in Num. xxvi was the more original.

⁴³ *Numbers* (Waco, Texas, 1984), p. 8.

hardly be understood in the sense of "fighting unit" here, for it is clear from Num. i 48 ff. that the Levites were set apart by Yahweh to serve in the sanctuary and were therefore explicitly exempt from military service.

Finally, if Mendenhall's theory were correct, then it might be expected that the high numbers in similar contexts elsewhere in the O.T. would be capable of the same explanation, but this is patently not the case. For example, in 1 Chr. xii 23-40, a passage which Mendenhall himself regards as an instructive parallel to the two census lists contained in Num. i and xxvi, each unit in the clan of Simeon would have consisted of some fifteen men, whereas each unit in the clan of Judah would have consisted of 133 men. Moreover, in the case of seven of the tribes listed in 1 Chr. xii (viz., Reuben, Gad, Zebulun, Manasseh, Benjamin, Dan and Naphtali) only the number of fighting units are mentioned, and there is no indication as to how many warriors were included in each. Mendenhall (p. 62, n. 49) seeks to overcome this difficulty by emphasizing that 1 Chr. xii is not a census, but a list of the tribes which came to Hebron to make David king, and so the precise number of men in each tribe would have been irrelevant; but the question inevitably arises: if the number was irrelevant in the case of seven of the tribes, why was it not also irrelevant in the case of the remaining five?

V

The basic weakness in the type of approach exemplified by scholars such as Petrie and Mendenhall is the implicit assumption that the numbers in the two census lists are to be interpreted in historical terms, and must therefore be made to fit the social, geographical and political realities of the period to which they are thought to belong. It is tacitly taken for granted that the Priestly writer was intent upon preserving what he considered to be authentic information from a bygone age, and the fact that he misunderstood and misinterpreted this information is not in any way intended to detract from his attempt to record what he took to be historical fact. Viewed in this way, the two census lists are regarded as significant historical documents in their own right, and once due allowance has been made for the Priestly writer's misunderstanding of the term *elep*, the lists may be regarded as providing important

insights into aspects of early Israel's social structure, such as the method adopted to muster and organize the army in the period before the establishment of a centralized political power (cf. Gottwald [n. 4], pp. 270 ff.).

It is here suggested that such an approach is misconceived and that it represents a complete misunderstanding of the Priestly writer's aim in recording the census figures. Far from attempting to preserve historically accurate information from Israel's past, it seems more probable that the numbers are purely fictitious and were simply invented, possibly by the Priestly writer himself. That the author, in recording these numbers, paid scant attention to historical reality is evident from the fact that in Num. i, Ephraim and Manasseh, the strongest tribes of the northern kingdom, are among the smallest numerically, while the small tribe of Simeon (which was soon absorbed into Judah) is represented as the third largest of all the Israelite tribes. In formulating the numbers for the individual tribes, the Priestly writer may well have been influenced by the earlier Yahwistic tradition, for two texts, usually assigned to the J source, suggest that the Israelites who journeyed from the land of Egypt numbered "six hundred thousand men on foot" (Exod. xii 37; cf. Num. xi 21). This number implied an average of 50,000 men per tribe and may well have provided a basis on which the Priestly writer could work. In order to give his two census lists some semblance of verisimilitude, it was necessary to break the numbers down in such a way that some tribes achieved a number above, and some below, the notional average of 50,000. Indeed, the artificiality of the numbers seems to be confirmed by the fact that, in each census, the figures have been manipulated in such a way that precisely six tribes exceed the average of 50,000, and six tribes fall below this number. It may well be that, from the perspective of the Priestly writer, a certain logic may underlie some of the figures recorded,⁴⁴ but for the most part no special significance can be detected in, or was intended to be attached to, either the numbers given for the individual tribes or the variations which exist between the first census and the second.

⁴⁴ For example, in both lists Judah is given the highest number, as might befit a tribe which was regarded by the Priestly writer as occupying a pre-eminent position among the people

In attributing such large numbers to the Israelites, the Priestly writer was probably merely observing a recognized literary convention, which is widely attested both in the O.T. and in the literature of the ancient Near East.⁴⁵ For example, in the ancient Sumerian king-lists the reigns of the kings from antiquity were greatly exaggerated,⁴⁶ no doubt in order to underline the importance of their rule. In the military domain, too, numbers were frequently exaggerated for rhetorical effect. Thus, Shalmaneser I is reported to have cut the throats of the Hittite army as though they were sheep, and he succeeded in blinding 14,400 captives and deporting 28,800.⁴⁷ In Sennacherib's inscription, the king boasts that at the time of the siege of Jerusalem in 701 B.C. he succeeded in taking 200,150 men, women and children as captives (*ANET*, p. 288). Clearly, these numbers should not be taken literally, for they were designed merely to magnify the extent of the conquest which had been achieved. Similar exaggerated numbers are frequently encountered in the O.T. Thus, according to Judg. xx 1-2, 400,000 Israelites marched against Benjamin, and according to 1 Sam. xv 4, Saul was accompanied by 200,000 foot soldiers as he went to attack the Amalekites. In 2 Chr. xiii 3 Abijah is represented as going to battle with a force of 400,000 fighting men against Jeroboam, who himself had 800,000 able warriors. In 2 Chr. xiv 8 Asa is reported to have had an army of 300,000 men from Judah, and 280,000 from Benjamin, and according to 2 Chr. xvii 14 ff., Jehoshaphat had commanders over units ranging from 180,000 to 300,000 men. The use of such grossly inflated numbers in the O.T. frequently served a specific theological purpose. Thus, at times, the number of Israel's enemies might be exaggerated, no doubt in order to enhance the magnitude of Israel's victory, and to emphasize that the conquest had been achieved by Yahweh and not by human agents (cf. Josh. xxiii 10; Judg. i 4, iii 29); at other times, it is the number of Israelites themselves that is exaggerated, thus indicating the invincible power of Yahweh's people as they managed to crush all opposition (cf. Josh. viii 3 ff.; 1 Sam. xv 4 ff.).

⁴⁵ Cf M Hoegger, "L'interprétation des grands nombres dans l'Ancien Testament", *Hokhma* 25 (1984), pp 9-11

⁴⁶ Cf C Leonard Woolley, *The Sumerians* (Oxford, 1928), pp 21 ff

⁴⁷ E F Weidner, *Die Inschriften der altassyrischen Könige* (Leipzig, 1926), pp 118-19

There seems little doubt that it was this same literary convention that was observed by the Priestly writer in Num. i and xxvi, and that here, too, the large numbers were intended to be imbued with a profound theological significance. The aim of the Priestly writer was almost certainly to demonstrate the miraculous power of Yahweh who was able to sustain such a large throng during the trials and tribulations of the wilderness wanderings. But his purpose was also to emphasize the fact that the promise of abundant progeny made by Yahweh to the patriarchs (Gen. xii 1-3, etc.) was already in the process of being fulfilled during the period of Israel's desert sojourn. In this regard, it is not without significance that the Priestly writer, in Num. xxvi, has cast his census in genealogical form, for the number in each tribe is here preceded by a detailed division of that tribe into its clans and sub-clans, and their names are virtually identical with those of the sons of Jacob in Gen. xlv. It may well be that the aim of the Priestly writer was to emphasize the element of continuity which existed between the exodus generation and the families of the patriarchs; thus he was, effectively, affirming the status of the Israelites in the wilderness as the true heirs of Yahweh's promise to the fathers.⁴⁸ Once the census lists are viewed in this way, it becomes apparent that the important element in them is not the numbers themselves, but their theological ramifications: the numbers merely bear witness to the fact that Yahweh's promise was already beginning to be fulfilled even before the Israelites had reached the land of Canaan. If this interpretation is correct, then it is clear that attempts such as those outlined above to reduce the numbers in order to bring them to the touchstone of historical reality are not only unconvincing but unnecessary, for they merely serve to eclipse the very message that the Priestly writer was intending to convey. The essence of that message was that a nation, which seemed small and insignificant at the beginning of its existence, could increase out of all proportion as a result of Yahweh's blessing and in fulfilment of his promise to the patriarchs.

⁴⁸ Cf. M.D. Johnson, *The Purpose of the Biblical Genealogies* (Cambridge, 1969), pp. 44, 80.

VI

We are now in a position briefly to summarize our conclusions. It was indicated at the outset that the numbers recorded in the two census lists are clearly outside the sphere of what is historically acceptable, and a critical overview has been offered of the elaborate attempts which have been made to explain the existence of these prodigiously high numbers. First, it was regarded as unlikely that the numbers were based on the numerical value of the letters of the Hebrew alphabet, for there is no clear evidence that either list contains deliberations of a numerological nature. Secondly, the view that the lists might represent the census taken at the time of David was discussed but found to be unconvincing, for it involves the dubious assumption that the number 600,000 referred to the entire Israelite population and not just men of military age. Thirdly, it is doubtful whether the census numbers should be related to the configuration of the planets, for some of the mathematical computations involved are exceedingly complicated, and it is by no means certain that the Priestly writer would have been familiar with the complex structure of the Babylonian planetary theory. Fourthly, the thesis of Petrie (subsequently modified and refined by Mendenhall) that the term *'elep* in the census lists should be interpreted to mean "tent group" or "fighting unit" has been weighed in the balance and found wanting. It was suggested, in conclusion, that attempts to find a historical basis for the census lists must be abandoned, for the Priestly writer, in recording such high numbers, was merely observing a literary convention widely attested both in the O.T. and in the literature of the ancient Near East. This literary convention served a theological purpose, namely, to emphasize that God's promise to the patriarchs of innumerable descendants was already in the process of being fulfilled. The advantage of this interpretation is that it seeks to respect the integrity of the present text as it stands, and to do justice to the theological message which the Priestly writer was intending to convey.



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