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Proust, Christine

La multiplication babylonienne: la part non écrite du calcul. (French. English, French summaries) [Babylonian multiplication: the unwritten side of calculation]

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The first part of this article classifies the errors in the large Seleucid table of reciprocals AO 6456. Apart from those due to sloppy writing or copying, three types are found: (1) The contents of two consecutive sexagesimal places are added and appear as one place—e.g., $\ldots, 40, 14, \ldots$ becoming $\ldots, 54, \ldots$. (2) Intermediate zeroes are inserted where there is no empty sexagesimal place (in most cases, as pointed out by C. Proust, they appear where a sub-place for units or tens is empty, and our interpretation of them as errors may be mistaken). (3) One or more sub-places are omitted by error—e.g., $\ldots, 14, 48, \ldots$ becoming $\ldots, 18, \ldots$. It is observed that these errors always occur in the middle of numbers that contain more than 4 places.

The second part shows that the Old Babylonian tablet N 3958 explains this observation. In this text, the number 2,5 is submitted to 39 consecutive doublings. However, when the level of tens is reached in five-digit numbers, the numbers are split into two parts, whose doublings go on separately (the results being spliced wrongly when the second part exceeds five places). This cutting-up of numbers "in smaller parts suggests that the calculations were carried out on some arithmetical device of limited capacity", as once observed in these many words by J. Friberg [*Mesopotamian mathematics: a survey*, Chalmers Univ. Tech., Göteborg, 1991; MR1104880 (92g:01009)] but never, as far as known to the reviewer, followed up by him, nor connected to the analysis of other errors as splicing errors. Proust's analysis now confirms the hunch.

A closing hypothesis (presented as nothing more) connects the permanency of a five-place restriction to the appearance of the "hand" in Mesopotamian numerical discourse since the third millennium. Since she refers to the present reviewer for more examples, these can be given here: The sum total of an account in šu.nigin, "the hand contains"; a remainder is "left on hand"; the Old Babylonian text Db_2-146 puts an intermediate result "on your hand", and refers to it as "your hand".

Reviewed by *Jens Høyrup*