

SAW Three-Month workshop:

Mathematical Practices in relation to the astral sciences

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Contrasts and correspondences between different kinds of numbers and quantities: metrological tables from Late Babylonian Nippur and Uruk

Abstract: The goal of this presentation is to detect some specificities of the notations and uses of numbers and quantities in mathematical texts, in periods and places where astral sciences has developed significantly. The texts examined are metrological tables from Nippur and Uruk, mainly dated from the Achaemenid period (547-331 BCE). In these texts, the numerical and metrological notations exhibit contrasted features: sexagesimal and decimal numbers, positional and non positional systems, numbers for quantifying and numbers for calculating, phonetic and non phonetic writings, tables of fractions and of reciprocals. Metrological systems are examined and compared with systems used in other periods, or in other genres of text. The structure and composition of tables are analyzed in order to detect connections with astronomical texts. In conclusion, some similarities with Old Babylonian mathematical texts are brought out, but also differences, for example the use of decimal notations and phonetic writings for numbers. The correspondences between measurement values and sexagesimal place value notations reproduce the ones that have been used in Old Babylonian period, but other correspondences are explored. The Nippur and Uruk tables show a strong interest for the calculation of surfaces, and they seem to witness a mathematical culture different from the one developed in astronomy. But in the same time, they bear traces of interest for astral sciences (sections on gods, stars, and shadow scheme).