

SAW Conference

Mathematical Practices in relation to the Astral Sciences

March 26-27-28 and 30-31, 2015

Mathematical Practices: Contrasts

March 30th, 2015

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*By Process of Elimination: Further Remarks on the Operation *chu* 除 in Early Imperial Mathematical Astronomy*

Abstract - This paper will return to the operation *chu* 除 (“eliminate”) as explored by Karine Chemla and myself on January 23, refining the terminology deployed, providing usage statistics, and exploring actors’ rare words of definition and expository. We will revisit how *chu* “eliminate” is used to prescribe (1) subtraction for a positive integer difference, (2) repeated subtraction of a single value for a positive integer remainder, i.e. *modulo*, (3) subtraction of a series of values for a positive integer difference/remainder, and/or (4) division for a positive integer quotient and remainder. We will examine in what contexts each meaning appears and quantify the change in the term’s deployment over time. We will also examine how parallel expressions of all four operations function differently and/or share *chu*’s semantic load, and how the preferences for these expressions change over time. The goal of this analysis is to provide positive, quantitative evidence of synchronic and diachronic diversity in the language of basic mathematical operations in first-millennium Chinese sources for mathematics and mathematical astronomy.