

MATTHIEU HUSSON, CLEMENCY MONTELLE, BENNO VAN DALEN (EDS.), *EDITING AND ANALYSING NUMERICAL TABLES: TOWARDS A DIGITAL INFORMATION SYSTEM FOR THE HISTORY OF ASTRAL SCIENCE*, BREPOLS, TURNHOUT 2021 (PTOLEMAEUS ARABUS ET LATINUS. STUDIES, 2), IX + 594 PP., ISBN: 9782503596068.

NATHAN SIDOLI
WASEDA UNIVERSITY, TOKYO



Although historical scholarship on premodern mathematics and astronomy has dealt with numerical and mathematical tables for quite some time, in the last two decades a number of collections of papers and research projects have set an overview study of the tables themselves at the center of inquiry. (A numerical table is a tabular object composed of numerals and a mathematical table is a tabular object produced by mathematical rules. Not all numerical tables are mathematical, and the converse.) This focus has allowed scholars to compare the use of tabular methods across cultures and periods, and to systematically approach the combination of technical and historical methods that are needed to study these important source documents. The current book, which is addressed to scholars working in the field or perhaps graduate students, is an excellent addition to recent scholarship on tables.

There are three main categories of research questions that we might raise when working on premodern numerical tables. In the first place, we can ask how we should take the evidence of our physical sources. In particular, since the sources are prone to transmission errors, or are sometimes fragmentary, what sorts of techniques should we use reconstruct the table that we think the compiler intended. That is, how should we create a critical edition of the table, which may correct errors of transmission, or flesh out parts of the table that have gone missing. Another important question concerns what sorts of mathematical or scientific criteria were used to construct a given table. That is, what, if any, geometrical model may underlie the table, what algorithms were used to compute its terms, what numerical parameters were used, and how are all these related to the mathematical principles at work in other sources. Finally, to what uses were the tables put by historical actors. Namely, how were the tables actually used to make calculations, to carry out new research and to generate knowledge. The papers in his book address all of these sorts of questions.

The scholars involved in this book were well positioned to undertake this project. The editors are currently involved in major research projects studying numerical and astronomical tables (such as *History of Astronomical Tables in India*; *Alfonsine Astronomy: Shaping a European Scientific Scene*; *Ptolemaeus Arabus et Latinus*; *Tables Analysis Methods for the History of Astral Sciences*), and producing digital tools for investigating tables (such as *Computer Assisted Tables Editor*; *Digital Information Systems for the History of Astral Sciences*), and a number of the authors, including the editors themselves, have been working on tables for many years.

The book is divided into four parts. (1) The first part treats the most commonly used methods of table ‘cracking’ – which is the use of mathematical and statistical techniques to draw unstated information from the numbers themselves, such as the authors’ sources and methods of construction, missing entries, numerical parameters, dependencies between tables, computation methods, and so on. This part begins with an important methodological paper (by Glen Van Brummelen, Matthieu Husson, and Clemency Montelle) that summarizes the standard techniques, with examples. There are then papers giving further examples by José Chabás and Bernard R. Goldstein, Seb Falk, and Kailyn Pritchard. (2) The second part, consisting of papers by Montelle and Anuj Misra, gives two examples of how standard techniques of table cracking can be used to help produce critical editions of numerical tables. (3) The third part presents papers that use standard techniques of table cracking supplemented with an implementation of the computational and mathematical practices of the historical actors to produce critical editions of astronomical tables. There are three papers – by Van Brummelen, Sho Hirose, and Richard Kremer. (4) The final part – made up of papers by Husson, Johannes Thomann, and van Dalen – collects three sophisticated studies that employ computational and digital tools that do not fall easily into any of the other three parts. The final paper, by van Dalen, results in an edition of an important 13th-century geographical table, the only non-mathematical numerical table studied in this book.

If there is anything that I wish had been included, it would have been a full study of an ancient Near Eastern table, since this material has been especially well studied (there is one example in the first, methodological paper). On the whole, however, this book is an important contribution to our understanding of the premodern exact and astral sciences.