Why the Sciences of the Ancient World Matter 4

Robert Middeke-Conlin

# The Making of a Scribe

## Errors, Mistakes and Rounding Numbers in the Old Babylonian Kingdom of Larsa

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Robert Middeke-Conlin
Berlin Center for the History of Knowledge
Max Planck Institute for the History
of Science
Berlin, Germany

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*To all my teachers,*
*past, present and future*

# Acknowledgements

The impetus for this book[1] came while I pursued my master's degree, when I found myself unable to explain discrepancies in some texts. I wondered whether there might be some reason behind these discrepancies. At the time I could do little other than note the discrepancies and move on in my research. I was training in Assyriology, fascinated by ancient industries and economics and certainly not a historian of mathematics. It would not be until 2011, when the project Mathematical Sciences in the Ancient World (SAW), headed by Karine Chemla and co-directed by Agathe Keller and Christine Proust, put out a call for pre- and post-doctoral fellowships. This project, which was funded by a grant from the European Research Council, had as one of its axes of research state finance administrations and a focus on mathematics in Mesopotamia. The project I imagined focused on rounding numbers as a means to address discrepancies in these texts, in particular, rounding in connection with errors and mistakes. I wanted to explore whether the Old Babylonian scribes intentionally produced deviant values. With the support of my generous wife, I applied for this grant. She has always been my biggest supporter, during and since my Ph.D. work. I owe everything to her.

My project was accepted, and in November 2011 I travelled to Paris to work as a member of the SAW project under the direction of Christine Proust, my advisor. I was quickly counseled to take on a co-advisor, Cécile Michel—I readily agreed. Both were instrumental in guiding my work. I owe much to them. Any fault in this work is my own, any success is truly theirs.

The academic environment fostered by the SAW Project was quite remarkable. In addition to Assyriologists, I worked with Sinologists such as the project's head Karine Chemla, Indologists such as one of the co-directors, Agathe Keller, scholars of Medieval Islamic thought and mathematics, ancient Greek astronomy, modern

[1]The dissertation leading to this work was submitted as part of the SAW project and was made possible through funding from the European Research Council under the European Union's Seventh Framework Program (FP7/2007–2013)/ERC Grant agreement no. 269804. Research since then has been carried out under a fellowship from the Berlin Center for the History of Knowledge, through the Max Planck Institute for the History of Science.

researchers focusing on textual analysis and many others. This interdisciplinary approach to scholarship offered insights into research that necessarily guides my work even if it can be difficult to recognize exactly how.

This work required travel; each available tablet needed collation to witness that a discrepancy was the result of an ancient scribe's work and not a modern mistake, misrepresentation, misinterpretation, etc. In this regard, I would like to thank Christine Desse, the secretary of the Department of Antiquities at the Louvre, Nora Belkebla, the assistant secretary who allowed me to visit and view tablets at the Louvre and especially Norbeil Aouici, the artwork registrar who accompanied me through the Louvre and prepared tablets for my inspection. Thanks are also owed to Dr. Paul Collins, curator of the Ashmolean Museum's Ancient Near East collection, who allowed me access to the collection and even sat with me while I worked with and viewed texts from the Ashmolean Museum. At Leiden University, I would like especially to thank Drs. T. J. H. Krispijn, docent of the de Liagre Bohl collection, who kindly allowed me access to the collection and even took me to lunch. Finally, at Yale's Babylonian Collection where I visited several times, I must thank Prof. Benjamin Foster, curator of the collection, for granting me access to the texts and the rights to publish several texts. In addition, Ulla Kasten, the former associate curator and Dr. Elizabeth Payne, the collection's conservator at the time, as well as Dr. Agnete Lassen, the current associate curator, deserve my gratitude. They prepared tablets for my use and answered my questions. My work could not have been completed without my visits to these collections. These individuals and the institutions they work with were vital to the successful completion of this volume.

I defended my dissertation in June 2015, but following general advice given to me by Prof. Benjamin Foster years ago (before I even began pursuing my Ph.D.), I delayed publishing this work after defending. As he says, it is better to let things sit for a while and then return with fresh eyes and new evidence. In this publish-or-perish academic world, that may seem a bit anachronistic. However, I do believe this advice to be prudent. Problems were solved between my original dissertation and this renewed work. Several important texts have come to light, such as YBC 12273 presented in Chap. 8. The book is far better than it would have been had I rushed to publish. For this reason, I finally completed this book at the Max Planck Institute for the History of Science and I am deeply grateful to this institution for affording me the time to finish this work as the beginning of a new project on scribal numeracy. This book must be credited to many individuals who guided me in my work, allowed me access to vital resources, assisted me along my way and gave judicious advice when needed. Thank you to all who were there to help and guide me.

Robert Middeke-Conlin

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# Abbreviations

This list is largely populated by museum and collection numbers. However, three works are so ubiquitous under their glosses that, while it may seem odd to the outsider, it would have led to greater confusion if they were listed under any other name but their abbreviation: the CAD produced by the Oriental Institute of the University of Chicago, the ePSD produced by the Babylonian section of the University of Pennsylvania and finally, the VIM published by the Joint Committee for Guides in Metrology. In addition, some works, such as the Ur Excavation Texts, are best referred to by their publication number and not museum number because these are not always available.

| | |
|---|---|
| AO | Museum siglum, Louvre, Antiquités orientales, Paris |
| Ashm | Museum siglum, Ashmolean Museum, Oxford |
| AUAM | Tablets in the collection of the Andrews University Archaeological Museum |
| BM | Museum siglum of the British Museum, London |
| CAD | The Assyrian Dictionary of the Oriental Institute of the University of Chicago https://oi.uchicago.edu/research/publications/assyrian-dictionary-oriental-institute-university-chicago-cad |
| CAM | Tablets from the collection of the Cincinnati Art Museum, Cincinnati |
| CBS | Museum siglum of the University Museum in Philadelphia |
| CDLI | Cuneiform Digital Library Initiative (https://cdli.ucla.edu/) |
| ePSD | Electronic Pennsylvania Sumerian Dictionary, Babylonian Section, University of Pennsylvania Museum of Anthropology and Archaeology http://psd.museum.upenn.edu/epsd1/index.html |
| Erm | Museum siglum, State Hermitage Museum, St. Petersburg |
| HE | Tablets from the collection of the École Pratique des Hautes Études, Paris |
| HS | Tablet siglum of the Hilprecht Collection, Jena |
| IM | Museum siglum of the Iraq Museum, Baghdad |
| LB | Tablets in the Liagre Bohl Collection, Leiden |

| | |
|---|---|
| M | Collection siglum, John F. Lewis Collection, Free Library of Philadelphia |
| MAH | Museum siglum, Musée d'Art et d'Histoire, Geneva |
| MHC | Tablets from the collection of the Mount Holyoke College |
| MLC | Collection siglum, Morgan Library Collection, Yale Babylonian Collection, New Haven |
| MS | Collection siglum, Martin Schøyen Collection, Oslo |
| N | Museum siglum, University Museum, Philadelphia |
| N-T | Field numbers of tablets excavated at Nippur, in Chicago and Baghdad |
| NBC | Museum siglum, Nies Babylonian Collection |
| NI | Museum siglum, Archaeological Museum, Istanbul |
| PTS | Tablet siglum, Princeton Theological Seminary, Princeton |
| UET 5 | Figulla and Martin 1953 |
| UET 6/2 | Gadd and Kramer 1966 |
| UET 7 | Gurney 1974 |
| UM | Tablet siglum, University Museum, Philadelphia |
| VAT | Museum siglum, Vorderasiatisches Museum, Berlin |
| VIM | Joint Committee for Guides in Metrology. 2012 International Vocabulary of Metrology—Basic and General Concepts and Associated Terms, 3rd edition |
| YBC | Museum siglum, Yale Babylonian Collection |

# Glosses for Assyriology

Publication glosses are added here for the benefit of the Assyriologist who may be familiar with each text, but under its publication gloss rather than its museum number.

Alexander 1943: BIN 07
Dalley 2005: OECT 15
Dossin 1933: TCL 17
Dossin 1934: TCL 18
Grice 1919: YOS 5
Faust 1941: YOS 8
Feigin 1979: YOS 12
Jean 1926: TCL 10
Klengel 1973: VAS 18
Leemans 1964: TLB 1
Neugebauer 1935-1937: MKT I-III
Neugebauer and Sachs 1945: MCT
Riftin 1937: SVD or SVJAD
Sigrist 1990: AUCT 4
Simmons 1978: YOS 14
Thureau-Dangin 1938: TMB
Von Soden 1985: AHw
Walters 1970: YNER 4

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# Chapter 1
# Introduction


**Abstract** This introductory chapter provides a synopsis of the present volume and lays the groundwork for the study of errors, mistakes and rounding numbers. The book structure is described, an overview of the kingdom of Larsa is presented, including issues with chronology and provenance, methodology is outlined and then a brief introduction to discrepancies, errors and mistakes is laid out. Mistakes are understood as unintentional discrepancies that result from a scribe's own lapse in judgement or understanding. A mistake is avoidable, but the scribe is unaware of its existence. On the other hand, it is hypothesized that some errors were intentional, or at least that the scribe was aware of potential deviations between his assertion and a truth. Error would then be unavoidable, but the scribe is aware of its (potential) existence. This hypothesis is pursued throughout this volume where observational and conceptual errors, as well as rounding numbers as a kind of error, are explored.

How do we cope with error and mistake in texts? This is an essential question in Assyriology, a discipline defined by an almost overwhelming abundance of sources, the majority of which are economic in nature. Another question can be asked as well: How is error to be defined? Error, mistake and the potential for both are often a source of difficulty for the Assyriologist who, when a discrepancy is noticed in a text, must attempt to explain it. This is expressed by Van de Mieroop (1999: 125) concerning discrepancies in texts from the ancient city of Umma:

> Although any scholar who has added and subtracted numbers in such accounts, even with the help of a calculator, may sympathize with the Sumerian scribe's mistakes, these discrepancies create a sense of exasperation, as we do not know exactly what to believe.

Discrepancies in texts do appear and, while they may be exasperating at times, they must be explained in a way that incorporates the ancient Mesopotamian scribe's



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of the Ancient World Matter 4, https://doi.org/10.1007/978-3-030-35951-5_1

own culture. The economic texts[1] were produced by a scribe who was the product of an education and who carried out operations and procedures learned in the course of his education, whether this education was a scribal school, an apprenticeship or something else. A problem faced by the Assyriologist when assessing this environment is that the economic texts often give the appearance of lists, stating only desired information and leaving little trace of operations and procedures used by the scribe to construct his texts. Thus, the impact that the scribal education, for which there is a remarkable amount of evidence from the Old Babylonian period, had on the scribes themselves is often difficult to envisage.

Traces of these operations and procedures do, however, exist. The very discrepancies that pose a conundrum for modern scholars might also afford evidence for mathematical operations in the economic texts. If there is an error in a text, then there are traces of how the text was produced. If this error occurs in a calculation, then we, the modern observers, can begin to piece together how the text's author carried out his calculation. Error offers insight into how an ancient scribe understood his system of quantification, how he manipulated this system and how he exploited this system in everyday life. The environment which fostered the scribal art can be better understood by looking at error in economic texts in light of the scribal curriculum.

Error, here, is not simply a mistake. In fact, error is differentiated here from a mistake. An error is intentional, or at least the scribe is aware of its potential. Error results from the scribe's own computational culture acting on him to produce an acceptable discrepancy between what is expected and what is stated in the text. On the other hand, a mistake is unintentional, the result of the scribe's own inattentiveness, although this lack of attention may be the result of surroundings as well. The present work seeks to explore this distinction by situating error in the computational culture which fostered it. Rounding numbers is used to enter into this discussion, but in order to explore how rounding numbers was expressed in the scribal education and adapted for administrative purposes, the present work must explore error in its entirety, distinguishing error from mistake.

To help in this discussion, this work isolates how error appeared and was dealt with, as well as how rounding numbers was practiced in a particular culture. The purpose of this work is to discuss how and why rounding numbers was carried out in the kingdom of Larsa, a kingdom that flourished in the early Old Babylonian period, that is, the beginning of the second millennium BCE. This period and place are chosen because of the breadth of economic sources as well as the numerous mathematical texts derived from an educational context. This combination of economic and mathematical texts affords a unique glimpse into how mathematical processes were presented and learned in educational environments as well as how

[1]An 'economic text' is understood broadly as any text produced to assist the management of a complex economy and follows the definition of 'economic' provided by Merriam-Webster, 'of, relating to, or based on the production, distribution, and consumption of goods and services'. Merriam-Webster, https://www.merriam-webster.com/dictionary/economic. Accessed 25 October 2018.

accounting was practiced in professional settings. By examining texts of this period, it is hoped to facilitate the exploration of rounding numbers as it was expressed in the scribal curriculum and adapted for administrative purposes.

Most of the economic texts discussed here present one or several errors, mistakes or examples of rounding in some form. Some texts clarify the use of numbers in the texts themselves, even if no example of rounding, error or mistake can be detected. This is especially evident for Ashm 1924-453, an unprovenanced and undated list which describes two days of activity and which will be explored more in Chap. 5. Some texts when taken in isolation offer little evidence of the mathematics involved in their production. However, as a group they reveal much about the mathematics incorporated in their production and the purpose of rounding in this environment. This is particularly evident for the texts belonging to the grain storage bureau, which are discussed in Chap. 7. Thus, all texts presented or discussed here help to understand error and rounding numbers, as well as the mathematics behind these processes, in the various economic environments.

## 1.1 The Book Structure and Technical Notes

The work here is divided into two main parts, an introductory part and the main discussion. The first part introduces this volume and provides a framework for the texts studied here. This introductory chapter outlines a brief description of the kingdom of Larsa and then describes the methodology used in this study. These initial remarks help to set up discussion by providing the context of the ancient texts as well, modern scholarship and then preliminary comments on error and mistakes. Chap. 2 begins this work by entering into a discussion of numbers and metrology as well as a brief outline of Old Babylonian mathematical education. Appendix 3 presents a catalogue of metrological list and tables as well as numerical tables studied and exploited in the chapter. Chap. 3, a textual discussion, describes the texts themselves and the archives in which they were produced. This discussion helps to understand how texts are used and how they generally relate to each other. The texts themselves are presented in Appendix 1. Chap. 4 will present a study of the scribes and bureaus that define the texts. It is supplemented by Appendix 2, a scribe by scribe study and analysis written to introduce the actors who produced the economic texts studied here, as well as the mathematical knowledge each actor exhibits. The discussion in Chap. 3, then, provides a general context for the texts, while Chap. 4 links the texts to one another and to the scribes that produced them.

The main discussion begins with Chap. 5, which examines number use in the economic texts discussed here, and which is supplemented by Appendix 4, an index of prices, values, and wages from the Old Babylonian kingdom of Larsa. Chapter 5 ties the economic texts and administrative traditions introduced in Chaps. 2 and 3 to a mathematical environment which is fostered by the scribal education seen in Chap. 2. Chapter 6 presents the distinction between mistakes and errors while exploring basic addition. Chapter 7 discusses measurement instruments, practices,

and how these instruments and practices relate to the discrepancies discussed in this work. In Chap. 8, estimation in the form of revenue, prices, and labor calculation are all discussed. This brings us to Chap. 9, where rounding in the scribal education and in the economic texts themselves will be described. Here, the reason behind rounding numbers becomes apparent, and how rounding numbers related to the mathematical processes introduced in the prior chapters. Appendix 5 supplements Chap. 9 and presents tables that catalogue errors, mistakes, and examples of rounding in each text. Finally, Chap. 10, the conclusion, discusses rounding numbers, how this was expressed in the various forms of scribal education, and what this tells us of the scribal education. The appendixes are followed by the bibliography, a word index, a name index (personal and geographic), a text index and a general index.

Crossing between the history of mathematics and Assyriology has proved a challenge for this volume, which presents both a mathematical study and a textual study. However, a particularly difficult boundary between the history of mathematics and Assyriology appears with the textual study. In history of mathematics, primary sources are typically referred to by their museum number. In Assyriology, primary sources are often referred to by their primary publication and these are often given in glosses. A decision had to be made as to how to reference each text and these references needed to be followed consistently. Thus, it was decided early on that museum numbers are the most efficient and consistent way to refer to texts. However, not all texts have a museum number! Thus, texts published by Riftin in 1937 are referred to as Riftin 1937, and then the number provided by Riftin, rather than as Erm—. To facilitate consistency, Ur Excavation Texts are referred to as UET because not all texts in this series have full museum numbers, or even excavation numbers. Their primary publication is the best way to reference these texts. To preserve clarity, Assyriological glosses used to refer to primary publications are largely avoided here. However, these glosses are listed just after the list of abbreviations to tell the Assyriologist that, for instance, Riftin 1937 is often referred to as SVD or SVJAD. The goal, whether successful or not, is transparency for both the historian of mathematics and the Assyriologist.

In this way, each text edited here is assigned a museum number, or another number commonly used to designate each text in the collection where it is located, followed by a CDLI number[2] indicating where, when available, an image or copy of the text can be seen and where additional document details can be found. Following this is a list of where the copy of each text and other editions can be found. Because this study focuses on discrepancies, it was deemed vital to view

[2]CDLI stands for the Cuneiform Digital Library Initiative, a joint project of the University of California, Los Angeles, the University of Oxford and the Max Planck Institute for the History of Science, Berlin. The purpose of CDLI is to catalogue cuneiform texts, including high resolution photographs or copies and transliterations when available, publication information, collection information, and more, as well as multiple search parameters. Each object is catalogued by a CDLI number which serves as one search parameter on this database. See https://cdli.ucla.edu/. Accessed 30 June 2018.

each object if possible, as well as other collations, so that a list of collation dates and publications follows. After this comes the date formula. Additional background information is provided before the texts themselves appear in transliteration and translation, followed by notes regarded as important for the study of the text in general and discrepancies in these texts in particular.

When interpreting a text, tables will attempt to differentiate between values found on the text in question according to the following conventions: if a measurement value or a number is derived directly from a value or number found on the text, such as a transformation from a measurement value to sexagesimal place value notation (henceforth SPVN), italics is used. When presenting a modern, unstated transformation, whether from a measurement value to a SPVN number, or from a SPVN number to a measurement value, an arrow (→) is used, which shows the direction of the transformation. This transformation is then followed by the metrological table from which the transformation is derived. If a number is not found in the text but is a calculated number instead or a value based on information found on a text, it will appear underlined. When an expected measurement value or a number deviates from what is written on the text, then it appears in bold. The word 'transform' is used in this volume, following Christine Proust's advice in private conversation to denote a mathematical process of movement between measurement or numeric values and SPVN numbers, that is, between discrete value and floating or abstract numbers.

This volume attempts to express numerical and measurement values in translation and discussion with the maximum possible transparency. Thus, in translation and interpretation, measurement values are stated as closely as possible to the form in which they are expressed in the texts. For instance, written '1(diš) $gin_2$' are translated as '1 *gin*' and appear as such in interpretation and discussion, not as '1 shekel'. The written form '2/3 ma-na' will appear as '2/3 *mana*', not '2/3 *mina*'. Numbers, such as '1($geš_2$)' in system S will appear as '1 × 60' in translation and commentary, while '1(geš'u)' is translated as '10 × 60', '1($šar_2$)' is translated as '1 × $60^2$' while '1(šar'u)' as '10 × $60^2$' and so on.[3] An artificial, modern place value notation, such as that espoused by Sollberger (1966: 7) for capacity measurement values, will not be used in this volume to express value in translation or interpretation.[4] The reasons for this approach are threefold. First, it is intended to make the texts and interpretations more transparent to the non-Assyriologist who may be interested in this study. Second, metrology as it appeared in the texts is

[3]See Chap. 2 for discussion of these metrological and numerical systems.

[4]In Sollberger's 'transliteration' system, quantities for *gur*, *bariga* and *ban* are transliterated as integer numbers or fractions with a defined magnitude and separated by a period (.). Thus, 1 *gur* in the capacity system is transliterated as 1.0.0, 1 *bariga* as 0.1.0, 1 *ban* is 0.0.1. A final measurement value, *sila*, is separated from these values by a space or appears independent of these values. While this system may be convenient to the Assyriologists, as Proust (2009: §6.4) states '"positional" transliteration is a source of confusion because it gives the reader the impression that the ancient system is positional, which is not the case. Moreover, it implies 'an anachronistic use of zeroes'. For a discussion of the capacity system, see Chap. 2 in this volume.

distorted if it is based on modern conventions by which measurement or numerical values are expressed as if they are biblical or modern measures or in a place-value system, as is commonly done in Assyriology today. Indeed, when a modern, artificial place value notation is used to express numbers, it cannot be understood as a translation but instead as an interpretation of numerical or measurement values. Third, and this will become more evident in Chap. 2, transliteration and translation here attempt to mirror how measurement values appeared on the metrological lists and tables as learned in the elementary phase of the scribal curriculum, so that transformation is easier to understand when written in this way. For these reasons, such modern systems of interpretation must be ignored or adapted here because metrological and numerical values are the basis of textual study.

In addition to a note on numbers and measurement values, calculations themselves as found on the texts can be difficult to understand. This is true even for the experienced mathematician. The calculations here were each checked online using a tool, *Mesocalc*,[5] which was developed by Baptiste Mélès with the guidance and advice of Christine Proust. This tool can be used by anyone unfamiliar with mathematics in the Old Babylonian period to perform a calculation, as well as by experienced historians of Old Babylonian mathematics to double-check work.

Some basic, and in some cases tentative definitions should also be laid out concerning errors and mistakes. First, as stated above, an error, as tentatively understood here, is intentional, or the scribe is aware it could exist. Errors result from the scribe's own computational culture acting on the scribe to produce an acceptable discrepancy. A mistake is understood here as an unintentional discrepancy, the result of the scribe's own inattentiveness. Discrepancy is used here as a neutral term to describe the difference between what is expected by the modern observer and what is stated in a text. This discrepancy could be the result of anything, from the modern reader's misunderstanding of an ancient practice to a scribal mistake. An approximation is understood as a stated value or number that is close in value to, though not the same value as the true or expected value or number. The actor who stated the approximate value or number is aware it is probably not the same as the true or expected value or number. A rounded value or number is understood as an intentional discrepancy that occurs when the expected value or number is replaced by another value or number that is near to this expected value or number but shorter, simpler, or presents a more concise statement than the expected value or number. Truncation is also an intentional discrepancy that occurs when part of a value or number is either rounded off or simply removed. It is then considered as a kind of rounding. Estimation is used to describe a calculated approximate value or number. An estimation does not state reality, only an expected or projected reality.

Finally, this work centers around the kingdom of Larsa, the capital of which was the city of Larsa. In this work, the city Larsa is referred to either as 'the city of Larsa' or simply as 'Larsa', while the kingdom itself is referred to as 'the kingdom

[5]Mélès et al. (2013–2018): Mesocalc: A Mesopotamian Calculator, http://baptiste.meles.free.fr/site/mesocalc.html, accessed 30 June 2018.

of Larsa.' This can be hard to distinguish at times. However, we are ultimately referring to the crown which is based in and derives its power from the city of Larsa, so that reference to political power must be to the city itself or the king, and not the kingdom which expanded and contracted with the city's fortunes.

## 1.2 An Overview of the Kingdom of Larsa, Past and Present

The scope of research here is limited to the Old Babylonian period in southern Mesopotamia, specifically the kingdom of Larsa, so that it is important to briefly present this kingdom, its rulers, chronological issues of the Old Babylonian period and the modern archaeology of the ancient city of Larsa. The Old Babylonian period begins with the collapse of the third dynasty of Ur and the rise of the kingdom of Isin around the end of the twenty-first century BCE. While the prior two kings were subordinate to the kings of Isin, the kingdom of Larsa was firmly independent from the kingdom of Isin with the reign of *Sāmium* (1976–1942 BCE). At its height under the reign of *Rīm-Sîn* the kingdom of Larsa controlled the entirety of what would become southern Babylonia, including the cities of Ur, Uruk, Nippur, and finally Isin, from *Rīm-Sîn*'s thirtieth year in power. The kingdom retained independence until *Hammu-rābi* of Babylon conquered it in *Rīm-Sîn*'s sixtieth regnal year, 1763 BCE. Larsa and all of southern Mesopotamia remained under Babylonian supremacy through the rest of *Hammu-rābi*'s reign and for the first dozen years of the reign of *Hammu-rābi*'s son, *Samsu-iluna*. Around *Samsu-iluna*'s tenth year in power, the city of Larsa revolted, along with the rest of southern Babylonia. The violent suppression of this revolt would leave southern Babylonia in ruins for the remainder of the old Babylonian period.[6]

Eight kings of Larsa are represented in the texts here, *Gungunum*, *Sūmû-el*, *Nūr-Adad*, *Sîn-iddinam*, *Warad-Sîn*, *Rīm-Sîn*, *Hammu-rābi* and *Samsu-iluna*. The latter two, *Hammu-rābi* and *Samsu-iluna*, were kings of Babylon who ruled the kingdom after Larsa's conquest by *Hammu-rābi*. Table 1.1 lists all the kings of Larsa from the collapse of the Ur III state to *Samsu-iluna*, including the rebellious *Rīm-Sîn* II.[7]

Fitzgerald (2002: 35) notes that while the Larsa king list starts with *Naplanum*, the first king who certainly ruled this city was *Zabāia*. In addition, *Hammu-rābi* only reigned at Larsa for the last nine years of his reign. His rule in Babylon started in 1792.

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[6]This is not the place for a discussion of the political vicissitudes of the Old Babylonian period. For an in-depth discussion of the political history for this time period, see Charpin (2004b). For the independent kingdom of Larsa in particular, see pages 68–74 and 76–127. For *Hammu-rābi*'s conquest of Larsa, see pages 317–324, while the revolt of the kingdom of Larsa under the reign of *Samsu-iluna* and its aftermath are discussed on pages 337–346.

[7]For a survey of the kings mentioned here, see Fitzgerald (2002). See Van de Mieroop (1993) for a more in-depth discussion of the reign of *Rīm-Sîn*, and Charpin (2003a) followed by Van de Mieroop (2005) for more in-depth discussions of the reign of *Hammu-rābi*.

**Table 1.1** Rulers of Larsa

| Royal name | Start | End |
|---|---|---|
| *Naplanum* | 2025 | 2005 |
| *Iemṣium* | 2004 | 1977 |
| *Sāmium* | 1976 | 1942 |
| *Zabāia* | 1941 | 1933 |
| *Gungunum* | 1932 | 1906 |
| *Abī-sarē* | 1905 | 1895 |
| *Sūmû-el* | 1894 | 1866 |
| *Nūr-Adad* | 1865 | 1850 |
| *Sîn-iddinam* | 1849 | 1843 |
| *Sîn-irībam* | 1842 | 1841 |
| *Sîn-iqīšam* | 1840 | 1836 |
| *Ṣillī-Adad* | 1835 | 1835 |
| *Warad-Sîn* | 1834 | 1823 |
| *Rīm-Sîn* | 1822 | 1763 |
| *Hammu-rābi* | 1762 | 1750 |
| *Samsu-iluna* | 1749 | 1712 |
| *Rīm-Sîn* II | 1740 | 1736 |

After Fitzgerald (2002: 156–164) and Roaf (1990: 110–11)

### *1.2.1 The Trouble with Chronology*

However, a serious caveat must be mentioned concerning the dates just listed. While the number of years the Old Babylonian kings reigned is reasonably certain, the dates of each king's reign are uncertain because chronology is still a debated topic in Old Babylonian history. There are three main hypotheses: the high chronology espoused by Huber (1999–2000), the low chronology argued by Reade (2001) and the middle chronology which is the most widely used today (Mcintosh 2005: 46–47). The earliest relatively certain date of Mesopotamian history is about 910 BCE, when the preserved examples of the Assyrian eponym list break off and scholars have to guess between different regnal dates. See Hunger (2009: 146) for this. On Babylonian chronology, Hunger (*ibid.*: 149) states:

> Applying the three chronologies to the well-known king Hammu-rapi of Babylon, his reign is dated as follows:
>
> "High chronology": 1848-1806 BC
>
> "Middle chronology": 1792-1750
>
> "Low chronology": 1728-1686
>
> The end of Hammu-rapi's dynasty, which occurred 155 years after his death, is therefore placed in 1651, 1595, or 1531 BC respectively.

An even lower chronology places *Hammu-rābi*'s reign between 1696 and 1654 and the end of the dynasty at 1499 BC (*ibid.*: 149). See Hunger's (2009) article for a

concise description of this debate. The middle chronology is followed here out of convenience, because it is the most widely used today.

### *1.2.2 The City of Larsa, Its Environs and Modern Archaeology*

While chronology is problematic, the archaeology of the city of Larsa has its own problems. This city's modern history begins in 1853, when Loftus and Rawlinson identified the modern site Tell Senkereh as the ancient city of Larsa (Edzard and Farber 1974: 111). Loftus (1857: 244) described it in his report as a low, circular platform rising to about 70 feet (21 m) above the plain, with a circumference of about 4.5 miles (7.25 km). The ruins were visible from the ancient city of Uruk, modern-day Warka. The city itself lies about twenty kilometers east of the Euphrates and west of the Tigris. A canal running from Bad-tibira to the east of Larsa and through the city supplied it with water and connected it to the rest of the kingdom (Adams and Nissen 1972: 39 and map p. 36). Loftus (1857: 244) described this site as rich in tablets: 'So numerous were the clay tablets, I almost arrived at the conclusion that the fine brown dust of the mounds resulted from their decomposition'!

Loftus' expedition occurred in the mid-nineteenth century. The main aim of this expedition was to outline buildings, ascertain the importance of the site and then to recover valuable antiquities.[8] He was scarcely interested in the myriad texts that he reports as covering the mound, which meant that scientific excavations would wait until Parrot's excavation in 1933 (Parrot 1933, 1934). In the meantime, Tell Senkereh was plundered extensively for texts and artifacts, flooding the antiquities market with tablets that eventually filled the collections at Yale, the Louvre and elsewhere. Parrot (1933: 175) writes as follows of that first campaign in the city:

> A quelque 20 kilomètres à l'orient de l'Euphrate (croquis, p. 172), au milieu d'un désert de sable, les monticules désolés, qui recouvrent les ruines de Larsa (aujourd'hui Senkereh), furent dans le courant de l'année 1931, soumis à un pillage sévère. Ils n'étaient d'ailleurs pas inconnus des fouilleurs clandestins, qui, depuis longtemps, y faisaient des prélèvements destinés à alimenter le commerce des antiquaires de Bagdad. Ainsi arrivèrent sur le marché les innombrables tablettes, lettres ou contrats. Au printemps 1931, le pillage recommença, mais cette fois à grande échelle et systématique, et il y fallut l'intervention de plusieurs avions pour arrêter des travaux qui avaient déjà commis de graves ravages, tant parla transformation du site bouleversé de milliers de trous que par les découvertes précieuses réalisées en peu de temps et dont il a déjà été possible de se rendre compte, d'après les objets arrivés sur le marché.

[8]See Loftus (1857: Chap. 20, 240–62) for his work there.

Thus, the vast majority of texts from this city, the capital of the kingdom of Larsa which at its height ruled much of Southern Babylonia,[9] are unprovenanced. Their origin is suggested by modern scholars, sometimes based on the few texts resulting from scientific excavation.[10] Indeed, the majority of texts studied here are derived from these unscientific digs that populated the early collections.

Excavations continued at Senkereh in 1967 again by Parrot (1968), with additional campaigns directed by Margueron in 1969 and 1970 (Margueron 1970, 1971). Further excavations were led by Huot between 1976 and 1991,[11] with all excavations primarily focusing on occupations of the Old Babylonian period and later. However, texts have been recovered from these excavations, such as those discovered in the sixth season of excavation (cf. Calvert et al. 1976) in the Ebabbar temple and described by Arnaud (1978), or those found in merchant households and discussed by Charpin (2003b). As Arnaud (1978: 165) explains, texts were picked up on the surface or found in fill, and some in situ, that is, in their proper context.

## 1.3 Current Trends in Assyriology

In the case of many texts from the city and kingdom of Larsa, much information about provenance is lost, whether because the texts were discarded in antiquity or pillaged by modern looters. Thus, textual analysis plays a vital role in reconstructing the original provenance of these texts, as well as the history and fortunes of the kingdom of Larsa itself. Throughout the existence of Assyriology, textual analysis has been adapted to follow the needs of this discipline in exploring the history and society of Mesopotamia. Indeed, it is essential to understand the approaches to textual use and identification in Assyriological studies in order to understand problems associated with these approaches as well as useful models in collecting and interpreting numeric data. Current perspectives in Assyriological studies and textual analysis can offer useful tools for textual interpretation.

### *1.3.1 Archival Studies*

The latter half of the twentieth century until the present day is a period of research characterized by examining texts as parts of archives. This is quite apparent in both

[9]For a historic map of the kingdom of Larsa, see Roaf 1 (990: 109). Note, the kingdom of Isin would be incorporated into the kingdom of Larsa in *Rīm-Sîn*'s thirtieth year, around 1793 BCE.

[10]See, for instance, Arnaud's catalog of 183 inscribed tablets and objects derived from the sixth season of excavation at Larsa (Arnaud 1978) or those texts discussed by Charpin (2003b) found in merchant households of Larsa.

[11]See Calvert et al. (1976), Huot et al. (1978), Huot (1983, 1985, 1987a, b, 1989). Excavation reports extend through the 1985 season.

the scholarly and the administrative/economic traditions. With administrative texts there has been a shift over the years toward creating archives. Foster (1982a) notes a distinction between three archive types based on location and household size. According to Foster (1982a: 7), there are family or private archives, household archives and great household archives.

While this distinction is valid, a slightly different distinction is preferred in the present work: there are personal household archives, often indicated here by the shorthand 'personal' or 'household,' such as that extensively studied on *Šēp-Sîn* of Larsa, first published by Anbar in 1975 and 1978, and which has attracted much attention since. There are also what may be called merchant archives, that is, texts representative of an administrative system such as the *sūtu* texts first studied by Koschaker (1942) and taken up again in this period by Charpin in 1980 and Stol in 1982. Finally, there are craft or bureau archives, both labeled bureau archives here, such as the Isin archives studied by Van de Mieroop (1987), the Larsa oil bureau archives reconstructed by Charpin (1979) or the Mari oil bureau archive published by Soubeyran in 1984. The 1970s and 1980s saw a flowering of textual analysis within corpuses. This period would see the development of methodologies to examine these collections and would result in several interesting studies.

For instance, an archival approach helped to elucidate the administrative environments of ancient Mesopotamia. Through this approach, Foster (1982b), writing in 1982, was able to illuminate educational practices in the Sargonic period. To Foster, some of the texts researchers previously believed to be administrative texts are in fact educational texts used to educate a young scribe in a specific bureaucratic setting. This is a significant difference from the Old Babylonian period when there was a clearly defined scribal curriculum [see, for instance, Veldhuis (1997), Tinney (1999), Robson (2001b), Proust (2007) and Delnero (2010)]. It also raises the question of how to define texts that on outward appearances claim to be something they are not. Foster's construction blurs the boundaries between mathematical texts and administrative texts.

More recently, Hallo's 2004 study succeeded in reconstructing a particularly advanced accounting system in the Ur III period. Hallo's study presents multiple tablet types that were used in a record-keeping procedure somewhat resembling modern double entry bookkeeping. Double entry bookkeeping is here understood as a system of record keeping in which each transaction entered into an account, a debit, has a corresponding and opposite entry in an additional account, a credit.[12] In both Foster's and Hallo's discussions, tablet features such as typology (whether a tablet is multi-columned, single columned, bullae, etc.) or whether an image is present on a tablet, as well as text types such as receipts and deliveries, occupy a prominent place in reconstructing and examining the corpuses.

In reconstructing archives such as those mentioned above, scholars have begun to piece together regional variations and patterns in economic and social systems.

[12]This system probably continued into the Old Babylonian period, as suggested in Chap. 3 and explains several different archives and bureaus presented here in Chap. 4 and Appendix 2.