Gender, age, and labour organization in the earliest texts from Mesopotamia and Iran (c. 3300–2900 BC)

Kathryn Kelley
Brasenose College
University of Oxford

A thesis submitted for the degree of
Doctor of Philosophy
Trinity 2018

Acknowledgements: I would like to thank my supervisors Paul Collins and Jacob Dahl for their constant guidance; Bob Englund and Klaus Wagensonner for their numerous insights; Roger Matthews, Magnus Widell, Moudhy Al-Rashid, and John Baines for their comments on versions of this work; The Clarendon Fund and Brasenose College for their generous support; and my family.

Abstract

Clay tablets in the Proto-cuneiform script (c. 3300–3000 BC) of ancient Iraq and the Proto-Elamite script (c. 3100–2900 BC) of ancient Iran represent two of the earliest inventions of writing in the world—both of which are only partially deciphered. The separate scripts share only a few signs between them, including signs representing 'man', 'woman' and 'child' in administrative contexts. However, there are significant differences in the use patterns of these shared signs, which have not previously been commented upon or explored. Building on recent advances in text accessibility and decipherment, this dissertation takes a top-down approach, delineating all the uses of the key gender and age signs to reveal to what extent their meanings were comparable between the scripts. The results highlight how social and economic roles overlapped with gender identities in the minds of the scribes who were devising signs to represent humans. They also show that proto-cuneiform scribes devised broader, more flexible applications for the signs studied here than the proto-Elamite scribes found for the equivalent set, hinting at differences in the nature and development of the two scripts.

The dissertation defines a number of proto-cuneiform and proto-Elamite accounting genres involving gendered and/or age-defined humans, and begins to clarify the manner in, and extent to which, scribes were involved in labour organization by listing individuals or groups of workers. The sign studies in this dissertation show that 'herded humans', as described by Englund (2009) are explicitly recorded in less than 1% of proto-cuneiform texts, which means that scholars in related fields (G. Algaze 2008; J. Asher-Greve 2008; J. C. Scott 2017) have misapplied Englund's conclusions in arguing that uses of these signs in proto-cuneiform evidence direct, large-scale administration of dependent or coerced laborers. However, a very small number of these slave or captive texts did exist, which used the sign-set KUR ('male'), SAL ('female'), and TUR ('child') to describe humans. Discussion of 'labour organization' in proto-cuneiform should instead be refocused on the varieties of redistributive behaviors and the organization of diverse personnel in proto-cuneiform, using text format clues and corpus-wide analysis of sign use to draw conclusions. Paradoxically, while the absence of 'ration lists' for gendered workers in proto-cuneiform, as demonstrated in this dissertation, shows that over-reliance on later cuneiform can lead to mischaracterisations of the early script, in proto-Elamite the graphically equivalent 'female' and 'child' signs (M72 and M370-complex graphemes) were used almost exclusively in a small number of complex ration-and-worker texts that may in fact find strong parallel in mid-to late third millennium cuneiform rations lists, particularly those including many women and their children.

Chapter 1: Introduction and theoretical background

Preliminaries

Around 3300 BC in Southern Mesopotamia—perhaps at the city of Uruk—the system of writing we refer to as proto-cuneiform was invented. In addition to the c. 5,000 proto-cuneiform texts discovered at the site of Uruk, smaller numbers of similar texts were found at other Mesopotamian sites or have emerged on the antiquities market. As the earliest writing system in the region, and perhaps in the world, proto-cuneiform has long been linked to dramatic changes in society accompanying the development of the first cities. The contents of the texts remains poorly understood, but has been improving since the concerted efforts of the *Archaische Text Aus Uruk* project began a systematic restudy of the texts in the 1980's.

Although dating has been problematic (Dahl et al. 2013), some time around 3100 BC a writing system also appeared in Iran, with the largest number of texts coming from Susa in southwestern Iran, where the system may have been invented. This system shared with proto-cuneiform the medium of writing (clay tablets) and some key features, but otherwise produced an entirely original script. Yet a very small number of signs can find parallel with proto-cuneiform, and these include the signs thought to represent in each system 'man', 'woman', and 'child' in the context of worker rosters or slave trade texts.

This dissertation contributes to the ongoing discussion regarding the role of writing in creating and maintaining the social order of the earliest urban societies in the ancient Near East. In particular, it aims to clarify aspects of the bookkeeping practices

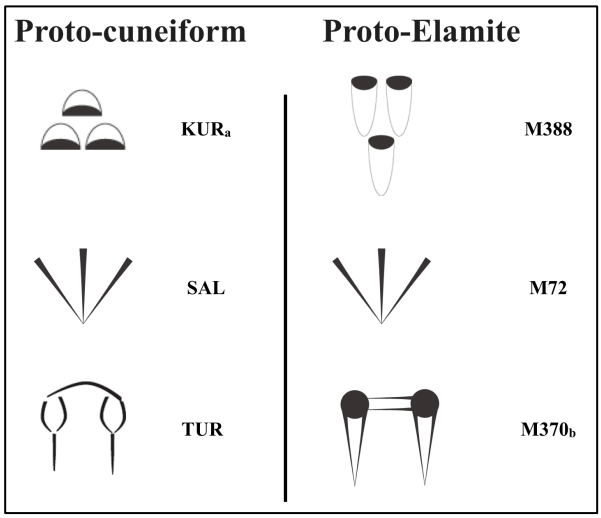


Figure 1.1: Signs for 'male', 'female', and 'child' (from top to bottom) in proto-cuneiform and proto-Elamite.

involving what have been termed 'low-status' (Damerow and Englund 1989a) humans in both proto-cuneiform and proto-Elamite texts. The parallel sign forms and to some extent use contexts, between the proto-cuneiform signs $KUR_{a\text{-}b}$, SAL, and TUR on the one hand and proto-Elamite M388, M72, and M370 (with variants) on the other have been crucial to establishing the role of early writing in both Mesopotamia and Iran in organising the labour force. However, the differences between the uses of these signs in the two systems may also provide important insight. To begin with, the basic sign frequencies are compared in figure 1.2.

Proto-Elamite sign	# uses	in # texts	ranking by most common signs[1]
M388	679	357	2nd
M72	98	43	24th

Proto-cuneiform sign	# uses	in # texts	ranking of most common signs[2]
KUR_a	261	172	Not in top 50
SAL	731	434	7th

Figure 1.2: 'Male' and 'female' signs: ranking by most common signs in the writing systems. While the 'male' sign M388 is the second most common proto-Elamite sign, the graphically and (it has been argued) semantically similar proto-cuneiform sign KUR_a is far less common. Conversely, the proto-cuneiform 'female' sign SAL is seventh most common in the writing system, while the proto-Elamite equivalent M72

[1] The frequencies of signs here are based upon the CDLI catalogue's complete translations of the proto-Elamite corpus; the entire corpus was processed using Rapidminer, an open source data mining software, to produce a list of proto-Elamite signs by frequency.
[2] After Englund 1998: 70. It should be taken into account that these frequencies are approximate, and may not consider more recent additions to the CDLI transliterations of unprovenanced texts.

is only 24th most common. Some reasons for these variations are explored in this dissertation.

The underlying data for the table above is to some extent comparable, with patterns of sign use in proto-cuneiform and proto-Elamite being roughly similar. On the one hand, Proto-cuneiform has c. 900 signs (Englund 1998: 68), and J. Dahl's working signlist for proto-Elamite includes around 1900 which may be greatly reduced (though not quite to Meriggi's 400 signs) as variants of a single sign are grouped. However, both proto-cuneiform and proto-Elamite have a broadly similar sign frequency range, with a large number of signs being attested only once, and a much smaller number used most frequently (Dahl: 2002; Damerow 1999/2006).

The sign frequencies in figure 1.2 cannot be fully interpreted without disentangling the possible multi-valencies of the signs, which is undertaken in the following chapters. However, it is already apparent that there are dramatic differences in the use contexts of the 'male' versus 'female' signs between the two corpora: in proto-cuneiform, the female sign SAL is a much more common sign, while in proto-Elamite the reverse is true—the 'male' sign M388 is in fact the second most common sign in the entire corpus.

Brief review of the literature

Over the past several decades, advances in Assyriology and in the digital humanities have greatly increased the potential for targeted studies of the proto-cuneiform and proto-Elamite material. These advances include first and foremost the publication of the *Archaische Texte Aus Uruk* (ATU) volumes and other series (MSVO; CUSAS), and most significantly the creation of the Cuneiform Digital Library's (CDLI) online database including a consistent system of identify signs and full transliterations of virtually all known proto-cuneiform texts. These tools are complemented by a

consistent treatment of proto-Elamite material on the CDLI (and Dahl TCL 32 *forthcoming*) which allows for comparisons between the two contemporary writing systems.

Progress in the decipherment of proto-cuneiform

Attention to the accounting format (Green 1981; Nissen et al. 1993) and the decipherment of the numerical systems (Friberg 1978 and 1979; Damerow and Englund 1987 121–66 [in Green and Nissen 1987]; Nissen et al. 1993; MSVO 3 *forthcoming*) have opened up new possibilities for understanding proto-cuneiform. Diverse subject-matters have been explored, and an overview of the state of knowledge is presented in Englund 1998. However, the proto-cuneiform texts remain untranslated, with commentary available only for select texts. An attempt at establishing 'typologies' by Silvestri et al. (1990) in *The Earliest Script of Uruk (Syntactic analysis)* volumes 1–2, did little more than categorise texts as Simple, Complex, and Semicomplex.

Charvát has produced several studies of society based upon the proto-cuneiform texts (e.g. 1998; 2012; 2014a/b). These studies remain difficult to use because of the methodology employed: Sumerian sign values are assumed to be relevant to proto-cuneiform contexts without sufficient proof, and translations are presented without supporting evidence from the text format or numerical information. While many of these studies offer useful observations cited in this dissertation, his elaborations of social and administrative hierarchies may often aim beyond the potential of the material, and unfortunately cannot be accepted without more rigorous exploration of the evidence.

More technical and systematic study of administrative hierarchies has come recently from Johnson's examination of 'bicameral orthographies' (2015) within the lexical material, which he complements with information from administrative texts. This study has focused on spheres of administration and their relationship to an elite rationing system, in some ways shifting the focus of discussion on proto-cuneiform away from the organization of lower class or lower status workers and providing more subtle understanding of the social contexts in which grain capacity measures and other food stuffs were recorded. This is in keeping with a recent research interest in both commensality and food storage in the ancient world (Twiss 2007; Pollock 2012; Pollock [ed] 2015; Manzanilla and Rothman [eds] 2016; Hastorf 2017). While this and another co-authored article (D'Anna et al. 2016) begin to enrich our understanding of the uses of proto-cuneiform writing for elite food distribution, it continues to leave open for discussion the role of writing in organising workers and distributing rations to lower class workers or dependents.

Progress in the decipherment of proto-Elamite

Primary features of the proto-Elamite writing system, including the direction of writing, the distinction between numerical and non-numerical signs, and other basic observations were made by Scheil (1905, 1935) and then Meriggi (1974). Merriggi's greatest contribution to decipherment was the first systematic signlist, which has served as the basis for a revised working signlist by Dahl[3].

[3] Available at http://cdli.ox.ac.uk/wiki/doku.php?id=proto-elamite_period

A step forward in understand proto-Elamite was the secure establishment of the numerical systems (Friberg 1978 and 1979; Damerow and Englund 1989a). Proto-Elamite texts relating to animal herding have been identified and described (Dahl 2005a), and a few other rare signs parallels with proto-cuneiform have been established (Damerow and Englund 1989a; Englund 2004b). Some proto-Elamite signs may be partially understood through their use in the texts, such as the most common proto-Elamite sign M288 which introduces capacity measure notations, and may represent a grain container. Yet the majority of proto-Elamite signs remain undeciphered, and this means that most text types within the corpus have not yet been described or classified.

Englund (2004b:130 ff.) briefly outlined a future approach to proto-Elamite in which sign sequences can be compiled and sorted to study patterns in the ordering of signs within strings. This type of work is now possible thanks to the codification of signs undertaken by Dahl and the complete transliteration of the corpus available on the CDLI. Dahl (2002), and Dahl et al. (2018) have begun using the database to present information on sign frequencies and patterns of sign use (referred to below as grapho-tactical analysis). While data-mining software could facilitate in-depth studies in the future, this dissertation includes some preliminary observations on sign use drawn from a predominantly manual sorting of data.

Theoretical approaches to early urbanism and the invention of writing

A great deal of theorization has been done over the emergence of the first 'states' or 'complex (urban) societies'[4], which is often situated in the late 4th millennium partly due to the fact of the invention of writing at that time. Yet these theories are rarely paired with the evidence contained within the texts, the latter which have instead been used primarily as archaeological data (Liverani 1998/2006: 113) whose existence signals 'social complexity'. This is understandable given the state of knowledge—including substantial and inherent limitations of our knowledge—of proto-cuneiform and proto-Elamite texts. However, following the recent advances in availability and understanding of the proto-cuneiform and proto-Elamite texts, detailed examination of textual sources may now be productively paired with the theoretical models developed primarily in archaeological and anthropological discussions.

To date, the most influential theoretical perspective applied to the proto-cuneiform data itself has been one emphasizing inequality (Damerow and Englund 1989a; Nissen et al. 1993; Englund 1998; 2009). The invention of writing has been seen as a technological response to a need[5] for organising the complex social environment of newly emerging urban centres (Nissen 1987). Complexity is often synonymous with inequality, the development of elites and control over craftsmen and other non-elites (e.g. Baines and Yoffee 1998). Adams (2014: 58) describes the development of

[4] The extensive literature cannot be fully cited here. Publications cited in the current dissertation include Childe 1950; Service 1975; Mann 1986/2012; Feinman and Joyce (eds) 1998; Pollock 1992, 1999; Stein 2001; Matthews 2003; Yoffee 2004; Emberling 2010; Kirch 2010; Lull and Micó 2011; Adams 2014; Routledge 2014.

[5] Although Lull and Micó (2011: 208) caution against views that take the emergence of elites and eventually 'the state' as fulfilling the 'needs' of society as a whole (rather than perhaps benefiting only certain groups within society).

cuneiform writing as a tool ‘progressively elaborated into a technology of bureaucratic control and repression’.

More recent anthropological and archaeological studies themselves have relied upon interpretation of the texts by Englund, which have focused on the use of the system to control ‘low-status’ individuals, a theme repeated in several of his works. The most explicit of Englund’s studies in this respect is the provocative article ‘The smell of the cage’ (2009), which begins with a long excursus on historic slavery in the American South, and proceeds to present important identifications of proto-cuneiform terminology for the age and sex of humans in slave or worker accounts.

Studies by Friberg (1991; 1999) and Nissen et al. (1993: 35) have suggested that the proto-cuneiform texts are a tool of economic planning and dictation of labour output. Woods (2015) interprets certain texts as ‘archaic equivalents of contingency tables’ by which ‘past correlations could be marshalled as a barometer for future performance’ (2015: 121). This echoes the role assigned to proto-cuneiform by archaeologist G. Algaze, who described the proto-cuneiform writing system as a tangible technological advantage in the area of human resource management, which he argues contributed to the ‘Southern Mesopotamian take-off’ (2008). Algaze’s influential work has received criticism from a number of angles (e.g. Andersson 2005; Emberling 2011), including its focus on a ‘core’ region that may deny agency to what is deemed ‘the periphery’ (Stein 2014) —in this respect, his failure to adequately incorporate references to proto-Elamite, another script with the potential to revolutionise labour organization, is notable. In addition, his arguments rely on Englund’s interpretations of proto-cuneiform texts that may incidentally over-emphasize the importance of labour organization in proto-cuneiform, given the

current state of decipherment and the related lack of a detailed overview of text types and frequency of subjects attested. Finally, it needs to be noted that proto-cuneiform only emerged at the tail end of the Uruk expansion, with the majority of texts known from the period (script phase III) following the contraction of Uruk's (and Susiana's [Pittman 2013]) wider influence; the advantages proposed by Algaze must therefore be limited to the final centuries of the fourth millennium, when the city of Uruk did indeed grow to a substantial size, but after the withdrawal of its longer-distance material culture influences.

Labour organization in proto-cuneiform and proto-Elamite

The partial decipherment of proto-cuneiform texts related to labour organization has relied on several factors. An overview of these factors is presented in Dahl et al. 2018. The first and most important of these are the observations on the structure and use of the numerical systems in proto-cuneiform. Friberg (1999) presents an important study which highlights the effectiveness of an approach using numerical analysis to draw conclusions about labour administration practices. However, the author admits that clearer understanding of the social contexts of the administrative tablets depends as well upon on further elaboration of the meanings of the non-numerical signs, something which his work does not cover. Such study of the contextual uses of signs could also confirm or modify his interpretations of the administrative calculations, since the starting point for some of his numerical analyses depends heavily upon assumptions about the organization of labour teams, and particular inequalities between 'overseers' and 'workers' as presented by Englund, that are ultimately drawn from later cuneiform parallels—including the idealised pan-Mesopotamian rationing

practices described by Gelb (see especially Friberg's [1999: 120] supposition that some texts record workers split into 'teams' of five or ten).

The second significant factor in previous studies of proto-cuneiform labour organization has been the noted correlation between some proto-cuneiform signs and later cuneiform writings for labour-related or slave personnel —most importantly, $ERIM_a$, SAL(.KUR_a), and GURUŠ (Nissen et al. 1993: 70–75). Studies including these observations have been broad in scope, dealing with basic identifications of diverse aspects of proto-cuneiform administration, and have not fully explored the specific contexts in which the signs are used, nor their frequencies across the corpora. Similarly, while some basic graphical and functional parallels between proto-cuneiform ERIM and proto-Elamite M54, as well as Sumerian cuneiform ugula and proto-Elamite M291 (Nissen et al. 1993: 77) have been established, the contexts in which they are used have not been thoroughly articulated.

Distinctions between slave and other labourers have not been articulated for the proto-cuneiform texts; correlation of the abovementioned signs in proto-cuneiform has led to a muddled view of lower class humans, in particular lower class women indicated by SAL or SAL.KUR_a. However, the distinction between forms of slavery and other labour is an important one and this dissertation hopes to clarify some of the textual evidence.

Steinkeller (2015) and Sallaberger and Pruß (2015) have criticised the relevance of the term 'rationing' in third millennium cuneiform labour administration, but no studies have yet applied this criticism directly to the proto-cuneiform texts. The general conclusions reached by specialists of proto-cuneiform texts regarding

rationing practices would be difficult to disprove, because the very design of the proto-cuneiform numerical systems betrays intimate link between capacity measures, time notations, and 'workers', including expressions of 'man-days' of work that can only be interpreted in the context of an idealised system of grain distribution to animals and working members of society (Vaiman 1974; Englund 1988; Nissen et al. 1993: 70–71; Friberg 1999). Englund in particular has drawn parallels with the better-understood labour bookkeeping practices of Ur III Mesopotamia (e.g. 1988). While these texts date around 1,000 years after the proto-cuneiform evidence, the parallels are sufficiently strong to provide basis for some interpretations of proto-cuneiform administrative contexts.

At the same time, the emphasis on coercion and dependency in proto-cuneiform administration is not beyond debate. The focus on the lower classes and rationing for third millennium cuneiform more broadly is most well-known in Assyriological literature through the influence of Diakonoff (1974a/b) and Gelb (1965, 1982). I. J. Gelb's 'The Ancient Mesopotamian Rationing System' (1965) drew on evidence from the mid to late- third millennium to establish a general system of rationing that he argues was prevalent across most of the third millennium. The emphasis on the low status/class of ration receivers is also associated with the Marxist scholarship of V. V. Struve (1954; 1969) and A. A. Vaiman (1989) who discussed inequality and exploitation of a working class in Mesopotamian history (see also Trigger 2006: 259–63 on 'Childe as Marxist Archaeologist' for the influence from the direction of anthropological archaeology). While focus on inequality is one valid approach, the limitations of the evidence must be carefully observed. A number of R. K. Englund's important interpretations remain hypothetical, including the suggestion that the

content of some proto-cuneiform texts can be accurately described with the terms ‘work gang’ and ‘overseer’, and that texts counting SAL and KUR_a include ‘naming cases’ that record the personal names of slaves.

As mentioned above, at least one study utilising proto-cuneiform evidence has begun exploring different social aspects of the relationship between centralized authority and the individual member of society. D’Anna et al. (2016) have discussed commensality through the evidence of food and drink in the texts. They question the primary focus of proto-cuneiform scribal activity, specifically asking whether the texts reflect ‘elite ‘control’ operated in the marshalling of labour forces, the storage of crops and their distribution as rations, *or alternatively* [emphasis added] the role of feasting and micro-distributions as part of the articulation of hierarchical strata within elite institutions’ (2015: 8).

Lastly, there has been a long history of discussions on the impact of urbanism and the rise of complex society on gender norms (Rapp 1977; Zagarell 1986; McCorriston 1997; Pollock 1999:116; Pollock and Bernbeck 2000; Al-Zubaidi 2004; K. I. Wright 2007). Some of these are Marxist or Marxist-inspired, with early inspiration from Freidrich Engels’ *The Origins of Private Property, the Family and the State*.
These studies have not benefited from the use of proto-cuneiform or proto-Elamite textual data in constructing their arguments, or at least in only the most cursory fashion (though many have used contemporaneous cylinder seal imagery). K. I. Wright (2007) attempts to bring in proto-cuneiform textual evidence in defence of the proposition that changes in gender dynamics were ‘essential to the evolution of urban society’ (2007: 235). Specifically, she proposes to see in the Jemdet Nasr period a

restriction on the emphasis of women's *reproductive* roles as a source of social power, accompanied by an increase in women's *productive* roles in workshops in societies with male figure-heads. Unfortunately, after making a valuable observation about the use of the sign SAL (a depiction of the female pubic area) in proto-cuneiform, in comparison with other images of the body in the Jemdet Nasr period (figurines, cylinder seals, and the Uruk Vase), Wright makes use of only Charvát's textual interpretations (see above) and does not address the administrative realities of women in the texts.

Male, female, and child signs between proto-cuneiform and proto-Elamite

Apart from early speculations by Scheil (1905; 1935) and more useful preliminary observations by Vaiman (1972/1989), Meriggi (1969, 1974) and Brice (1962), the comparable use of proto-cuneiform and proto-Elamite signs for what are most likely lower-class humans was finally established in the publication of the proto-Elamite texts from Tepe Yahya by P. Damerow and R. K. Englund (1989a), and reiterated in the overview of the former Erlenmeyer collection and other proto-cuneiform texts by the same authors —including a short chapter comparing the development of proto-Elamite labour bookkeeping (*Archaic Bookkeeping*, Englund, Nissen, and Damerow 1993). Explicit discussion of the relationship between male signs KUR_a and M388 and between female signs SAL and M72 (fig. 1.1), were mostly relegated to extensive footnotes in the Tepe Yaya publication, and only briefly illustrated in *Archaic Bookkeeping*. In a more recent article, 'The state of decipherment of proto-Elamite' (Englund 2004b) the author presents a chart of these and the handful of other signs shared between the two writing systems, but does not discuss the extent of their use parallels.

Dahl et al. 2018 identify a genre of proto-Elamite texts ('very long rations texts') defined by their complexity, internal structures, and use of signs M72 and M370 complex graphemes—that is, their inclusion of women and children. The article begins to explore the specific uses of the signs. It proposes that a group of signs in these texts used in parallel to M72 and M370 complex graphemes represent 'worker categories', and raises a number of questions about the bookkeeping context in which M72 'women' and male and female M370 'children' are identified. It also outlines some important differences between proto-Elamite M388 and proto-cuneiform KUR_a that are elabourated in this dissertation.

Research questions

Since many anthropologists and archaeologists continue to insist that 'radical social transformation… came with the earliest cities and states' (Smith 2009: 3), this study aims to elucidate some of the relevant data. Do the texts provide supporting evidence for the suggestion that the first cities were 'mobilizing unprecedented numbers of dependent personnel' (Baines and Yoffee 1998: 199) —and specifically that writing played a strong role in this process in Mesopotamia and Iran? Bernbeck (2009) and others (e.g. Routledge 2014; Lull and Micó 2011) have emphasized that it is time for researchers to explore alternative 'agents' within early complex socities—those members who may have contributed to, resisted, and continually recreated the political and social relations of early Mesopotamian cities but whose perspectives may not be directly represented by the preserved visual and textual messages of the political elite. He identifies a gap in the literature (2009: 40):

> History is most likely replete with situations wherein peasants, workers, women and other subjected sectors of a society tried to overturn ruling conditions (Scott 1976). Yet

> archaeologists have not bothered to investigate these closely, assuming that the sources would not allow us to do so.

In the case of the poorly understood proto-cuneiform and proto-Elamite texts, the perspectives may be those of an administrative elite exercising control over 'peasants, workers and women', but clarifying how these particular non-elite individuals are represented in the texts is a way to begin exploring the experiences (if not perspectives) of alternate actors within early Mesopotamian urbanism. The goal of this thesis will be to provide a more nuanced understanding of aspects of labour organization, including the roles of gender and age as categories within the administrative documents that are proposed to relate to labour. It also hopes to begin to disentangle (if appropriate) documents recording slaves or prisoners of war, from documents more directly related with production and remuneration.

Due to the continuing difficulties in understanding the archaic corpora, this study has a narrow focus: to clarify the use of the related signs $KUR_{a/b}$, SAL, and TUR in proto-cuneiform and their counterparts M388, M72, and M370 (plus variants) in proto-Elamite. These have been understood as sex and age markers, and are used in certain genres of texts that record human workers or slaves in their respective writing systems. For unclear reasons, these sets of signs are among the very few shared by the two writing systems, and their uses have helped in the partial decipherment of proto-Elamite. At the same time, they are not used in entirely parallel ways, and teasing out the differences could improve our understanding of the roles that writing played in organising the social worlds of the proto-cuneiform and proto-Elamite scribes. As a basic step towards more fully understanding the writing systems, the dissertation focuses on the varied uses of the signs in question, and highlights the uncertainties

that remain in attempts at 'translating' the content of both proto-cuneiform and proto-Elamite texts. These are necessary discussions to have in order to move forward in understanding the writing systems and their use to organize a workforce.

The fundamental question of interest relating to the comparisons drawn in this dissertation is, 'to what extent do the parallel signs reflect parallel traditions of organising dependent workers?'. In addition, we may speculate on why these signs represent one of the few points of contact between the scripts. Clarifying the way that sex and age markers were used may also contribute to discussions of gender roles and gender identity in these early urban contexts. In relation to this, the dissertation asks whether the texts themselves can provide any evidence for suggestions that large numbers of specifically female labour were employed in households administered by scribes, in the 'semi-industrial' manner known from mid- to late third millennia archives.

Available evidence

Evidence from all proto-cuneiform corpora is used in this study, although unprovenanced material is clearly referenced as such, in particular because the possibility of forgery is an occasional concern (Monaco 2016). Differences between proto-cuneiform texts known from disparate sites are insignificant, with a relatively high degree of standardisation being observed that allows for these texts to be considered together. Similarly, all proto-Elamite corpora can be considered together, and minor differences in sign forms and sign use are pointed out when relevant.

Limitations of the evidence and boundaries of the study

Working with two partially deciphered scripts requires that many questions posed in this dissertation remain unanswered. Texts from all known sites are included because, particularly for cuneiform, the picture of labour organization practices has depended on the complementary evidence of documents found at Uruk, Jemdet Nasr, and from unprovenanced texts. However this means that the discussion fails to focus on the reconstruction of an administrative system at any particular site, and cannot provide detailed study combining specific archaeological information with textual information (e.g. Sallaberger and Pruß 2015).

Because the focus of the study is on comparison between two contemporary writing systems, proto-cuneiform and proto-Elamite, it has not been possible to exhaust the possible comparisons between proto-cuneiform and later cuneiform via the lexical and administrative traditions. Much more work in these areas would be fruitful in the future, including systematic re-evaluation of the proto-cuneiform sign values. Therefore, while other third millennium cuneiform evidence is drawn on for parallel when appropriate, this study de-emphasizes its role in understanding proto-cuneiform, in particular to combat unproven assumptions about proto-cuneiform signs, their linguistic affiliation, and the social and economic contexts of proto-cuneiform writing.

A large number of sign combinations mentioned in this dissertation could be further investigated in the hopes of identifying linguistically recognisable personal names. However, the state of decipherment of both scripts means that such identifications would require research well beyond the scope of the current study. Sumerian and

Akkadian personal names of the third millennium have not been comprehensively compiled and studied. Limet (1969) collected Sumerian names primarily from the Ur III period, and Di Vito (1993) compiled and analysed third millennium Sumerian and Akkadian names including divine elements, while Andersson (2012) studied names incorporating the ruler's names or titles. Recently, Luo et al. (2015) presented the first steps in 'unsupervised Sumerian personal name recognition' through the use of a computer algorithm with results they argue are usable by the Assyriologist. The current lack of a comprehensive third millennium onomastica is a hindrance to the difficult task of identifying Sumerian, Akkadian, or other personal names in the proto-cuneiform texts.

The lexical tradition had proven an especially fertile area of investigation into the proto-cuneiform texts, because of the continuation of the traditions into later cuneiform. A recent PhD dissertation (Wagensonner 2016) and other studies by K. Wagensonner (2010, 2012, 2015) better define some of the organising principles of the proto-cuneiform lexical tradition and have begun to clarify proto-cuneiform sign use. The lexical tradition will be drawn upon when relevant in this study; however, space constraints limit the many possible in-depth studies from this perspective.

To conclude, the narrow focus of this dissertation is necessary in order to clarify the available evidence for further discussion; it also highlights many of the ambiguities in the record that must be fully recognized if we hope to come closer to fuller decipherment.

Methodology

The approach taken in this dissertation may be described as 'top-down', in that it considers the textual corpora as a whole, sorting evidence and narrowing down to the texts that can be considered relevant to gender, age and labour organization.
This approach was developed by taking advantage of the electronic database of proto-cuneiform and proto-Elamite texts. Since texts can be sorted through computer searches, it is possible to efficiently collect, compare, and group particular uses of proto-cuneiform and proto-Elamite signs, in order to achieve overviews of sign use corpus-wide. The methodology allows for testing of hypotheses about sign meanings through comparing similar sign sequences in multiple texts; this adresses one of the greatest weaknesses in the presentation of proto-cuneiform material by most scholars—claims are made about sign use (usually based upon later cuneiform sign readings) that are not supported by the proto-cuneiform evidence. The ability to produce and manipulate data on sign use is especially useful for these undeciphered scripts, for which little has been explored in the manner of sign frequency and the contexts of sign use. The top-down approach of this study also provides perspectives on the emphasis of certain administrative concerns within the corpora, which can contribute to broader discussions on the roles of early writing in the urban transformations of early historic Western Asia.

Key concepts

Households in early Mesopotamia

Following Assyriological practice, this study will use the term 'household' to indicate a productive unit in society, identified in Sumerian by the term e_2 and in Akkadian by

bītum. Gelb understood Mesopotamian households to be (primarily agricultural) 'economic units that were largely self-contained and autarchic' (1976: 5). The level of autarky is a question of interest, in parallel to the extent of integration of a household into other sectors of economic behaviour such as markets, or incorporation into larger political units; this is particularly discussed for the Ur III period by Garfinkle (2013) who suggests for that time a 'mixture of the *oikos* economy, patrimonial domination, and the persistence of local hierarchies' that he dubs the 'e_2-comony' (2013: 61). Another significant question is to what extent kinship structures were significant organizing factors within increasingly large households and eventually state-level societies (Rapp 1977; Zagarell 1986 and comments; Yoffee 1995).

Gelb (1979) introduced the Greek term *oikos*[6] as a translation for e_2 and *bītum*, although he admits the Greek *oikos* is only a partially suitable analogy[7]. Anthropologists have developed other terminology to discuss social organization, with some overlaps. Claude Lévi-Strauss's concepts of *maison* and the *société à maison* implied a specific type of 'corporate group' in which kinship is less significant as an organising factor than in kinship-corporate groups. The term 'corporate group' refers to groups of people who have in common their production basis (e.g. agricultural land), and corresponds to what Assyriologists usually call simply 'households', 'institutions[8]' or 'household institutions'. Another overlapping term, used mainly in sociology, is 'organization'.

[6] Renger 2007: 190 provides a history of scholarly uses of the term in political economy, which he traces to the 19th century economist Karl Rodbertus, and subsequently to Max Weber.
[7] In classical Greece *Oikonomia*, the concept of 'housholding', was described by ancient authors as a sphere of economic activity with certain moral characterizations, and one which was distinct from (and morally superior to) traders conducting exchange in markets. In fact, households were not entirely autarkic and did not exist in economic isolation, but interacted with both other households and markets (Leshem 2016).
[8] Despite its frequent use in secondary Assyriological literature, the term 'institution' (as in 'temple institution') is avoided here and 'households' is the preferred term. 'Institution' is used differently in

Three types of households, 'temple', 'state/palace' and 'private', are typically described for ancient Mesopotamia. Since households are defined as economic units (Gelb 1979), these also correspond to spheres of economic behaviour. It is now widely acknowledged that each these spheres of economic activity have operated simultaneously throughout Mesopotamian history, with varying levels of dominance. A significant difficulty in assessing the importance of various economic spheres is presented by the uneven representation of the cuneiform record; for example, the chance preservation of the e_2-mi_3 archive at Girsu originally led to characterisations of mid-third millennium Southern Mesopotamia as a 'temple-state economy' (Deimel 1931) in a model that left little room for other economic behaviour[9].

Different types of households may have predominated in the south and north of Babylonia. While an entirely temple-dominated third millennium economy has been dismissed (Gelb 1969; Diakonoff 1969; Foster 1981), it is still generally held that the temple sector was the most dominant in the southern-most part of Mesopotamia from the earliest periods; these southern Babylonian temple-dominated city-states have been contrasted with northern Babylonia (Akkad), the latter with affinities to northern Mesopotamia (Assyria) and Syrian 'palace economies' (Renger 1995; Steinkeller 1999).

some sociological literature, where it indicates the social ideologies often pervasive across broader society. This is especially true in the New Institutional Economics which is currently popular with many Classical world scholars (Bresson 2016) and recently applied to study of the ancient Egyptian economy (Muhs 2016).

[9] Adopted and modified by Schneider 1920 (See Liverani 2013: 106).

Redistribution and ancient economies

Assyriological and Ancient Near Eastern studies frequently refer to a 'redistributive' economy (Manzanilla (ed) 1997; Liverani 1998/2006; Prentice 2010; Sallaberger and Pruß 2015). This term was adopted from the work of Karl Polanyi (1957), who distinguished three types of exchange: redistribution, reciprocity and market exchange. These, Polanyi claimed, are not mutually exclusive categories but can co-exist in a given society. It may be more useful to think of redistribution as an activity undertaken by some societies, and which represents only one aspect of economic behaviour, rather than adopting the model of a 'redistributive society' (Nakassis et al. 2011). The basic principle of exchange in the form of redistribution is that products are brought to a central institution of collection before being distributed. The practice of redistribution of grain may ultimately have derived from that of 'pooling' in chiefdoms (Hudson 2015: 650 ff.) and transformed along with local developments in political economy. The exchange of food within many societies is laden with particular social significance. Sahlins, drawing on the evidence of ethnographic data from what he called 'primitive societies', expressed the social significance of food in the following way:

> Staple foodstuffs cannot always be handled just like anything else. Socially they are not quite like anything else. Food is life-giving, urgent, ordinarily symbolic of hearth and home… food dealings are a delicate barometer, a ritual statement as it were, of social relations…" (1972: 215)

The early Mesopotamian rationing system reflects state-level organization which also undoubtedly functioned not only as a practical way to keep dependents alive, and as a tool in economic planning, but also as a 'barometer… of social relations' to repeat Sahlins.

The 'tributary state' (Amin 1976 / Patterson 2005: 201) is a closely related, neoevolutionary anthropological construct, referring to a society in which a political authority extracts goods from the population, and often from neighbouring societies, leading to expansion or raiding. Pollock (1999: 78 ff. and 117 ff.) describes a shift in Mesopotamian political economies from 5th/4th millennium tributary economies to a third millennium '*oikos*-based' (redistributive) economy of the 3rd millennium. By this Pollock suggests that the means of production ('land, tools, and equipment') were more centrally owned or controlled in the third millennium by important households (including temple and palace households), and workers and production were thus more tightly controlled. The interpretation of the written record is crucial in this scenario, and the flourescence of proto-cuneiform in the Jemdet Nasr period sits at the junction of these two proposed behaviours.

Labour, status, and social organization

'Labour' can be defined in different ways and can involve individuals across the spectrum of society; labour can be specialised or unspecialised; it can be 'forced', 'paid', or entrepreneurial. Yet in discussions of ancient Near Eastern society, 'labour organization' has almost without exception implied the control of and rationing for work groups of various types, with a particular focus on those considered to be low status (or low class, see below) individuals visible in the economic documentation. The term 'status' is sometimes used in such discussions, with the implication that 'low status' individuals are either ration-recievers or chattel slaves (see Englund 2009: fn. 10).

In more common use, ‘social status’ is closely related to ‘class’. Originally a Marxian concept (but used across the disciplines of sociology, anthropology, economics, and others), it is control over means of production that defines social ‘classes’ of a given society. ‘Class’ overlaps with ‘status’, the latter which in sociological terms refers to social perceptions based on factors including but not limited to economic ones. In the case of third millennium Near Eastern studies, the sources for understanding how labour and status or class intersect are almost exclusively economic in nature, informing us much more about ‘class’ than ‘status’, strictly speaking. The term ‘low class’ is preferred in this dissertation as a shorthand for discussing ration-recievers or work-group members in economic documents throughout the third millennium (following Bernbeck 2009)—that is, those who do not have control over the means of production. In fact, their presence in documents of administrative control drawn up by scribes clearly attests to their alienation from the means of production and from ownership of the products of their labour.

Defining an individual’s ‘status’ on the other hand, based solely on their participation in a rationing system is problematic. This may be highlighted by the evidence for rationing practices in proto-cuneiform in association with officials from the LU_2 list (page 126) including the NAMEŠDA who has been understood as a city ruler or similar. The implications of rationing practices in relation to social status and class also remain to be clarified for the later third millennium: Studevent-Hickman’s (2008) suggestion that Ur III **erim/eren$_2$** (a term for workers) may represent a professional rather than explicitly status or class-related terminology. In short, textual evidence beyond that of rationing lists is necessary to inform us about the social implications of receiving rations. At the extreme, this can include determining whether there is

indication that an individual is a chattel slave subject to buying or selling. Use of the term 'lower class' is retained in this dissertation as a useful shorthand for the individuals in the proto-cuneiform and proto-Elamite texts that were listed in certain slave-trade or rationing texts by their gender and sometimes age. However, while the economic relations that defined the men, women, and children recorded in the earliest administrative texts were certainly intertwined with other social status implications, the latter may remain mostly unknown to us.

The focus of this dissertation is on these so-called 'low status' (e.g. Damerow and Englund 1989a; Englund 2004b), lower-class, or 'dependent' workers in both proto-cuneiform and proto-Elamite. This approach is taken in part since poor understanding of both scripts necessitates the narrow approach tracking the use of a small set of signs, and because the signs indicating gender and age are also, conveniently, those that are argued to imply low status and/or lower-class contexts in most cases (with proto-cuneiform SAL being an exception). What is more explicitly knowable about these individual's social class or status is usually only that they are recipients of standard amounts of grain (especially in the proto-Elamite evidence), and therefore presumably dependent upon or employed by an urban administration; and that in some texts individuals may be represented as captives or were the objects of an economic transaction that suggested they were 'commoditized', i.e. slaves (primarily in a limited set of the proto-cuneiform evidence).

Slavery in the early ancient Near East

There were complex shades of dependency in the ancient Near East. In some periods and regions this could be described as a system in which all men were servants to the

king and the king a servant to a god (Gelb 1982; Diakonoff 1987: 1), although the types and extent of slavery in different periods and regions of Mesopotamian varied, particularly between the south and the north (Jursa and Tost 2014). While certain categories of humans can clearly be shown to have a legal status comparable to that which we understand as 'slave' in our own and other societies, the native terminology is sometimes difficult to unravel (Westbook 1995; Reid 2014). One of the earliest references to a slave after the proto-cuneifom texts may be the inclusion of an IR_3 in the goods involved in a transfer of property on the early stone monument the 'Blau Plaque' (Gelb et al. 1989/1991 no. 11).

Slave labour in the strict definition represented only a small minority of labour in third millennium Mesopotamia, as also in the following two millennia in the region (Gelb 1976; Steinkeller 2015). Nonetheless, debate remains about the origin and status of many documented workers and ration-receivers in third millennium texts, including the thousands of women documented in relation to workshops of pre-Sargonic through Ur III periods. An enduring suggestion has been that many of these women were slaves originating from foreign lands, as indicated by the cuneiform writing $geme_2$ (female + mountain). Lafont (2013) attempted to tease out some information on the social position and origins of some of the women in the Ur III documentation, identifying four different categories: 'war-captives (nam-ra-ak)', 'purchased or indebted slaves ($geme_2$)', 'donated personnel (a-ru-a)' and 'women of the impoverished classes and outcasts of society'. Lafont emphasizes that these categories likely do not describe all the 'types' of ration-receiving women during the Ur III period, and that many were 'simply state dependents' whose social positions and living conditions remain opaque to us.

Captives of war converted to forced labour are mentioned in both administrative and literary texts. Some (particularly male) captives may have been blinded and employed as millers, gardeners, or other menial labourers (Heimpel 2009; Cooper 2010). An inscription of Šu-Suen reveals differential treatment of male and female captives at the end of the third millennium:

> He blinded the working men of the cities he had conquered and put them in service in the gardens of Enlil and Ninlil, and in the gardens of the major gods. He presented the working women of the cities he had conquered as oblates to the textile mills of Enlil and Ninlil, and to the temples of the major gods. (Frayne 1997: 304, RIME 3/2.1.4.3 iv 15–31)

A 'prisoner plaque' from a private collection, published by Steinkeller (2013a) may present the earliest known textual evidence for captives of war being assigned as workers in gardens.

There is unfortunately no space in the current dissertation to expand on anthropological and archaeological discussions of captive-taking in early civilisations. However, some observations from J. F. Brooks (2002) in *Captives and Cousins. Slavery, Kinship, and Community in the Southwest Borderlands* may prove thought-provoking in the context of early Mesopotamian and Iranian socieities and their probably expanding livestock economies. The economic and political dynamics were certainly very different in the late fourth millennium Near East than in the 18th to early 20th centuries A.D. Americas, but familiar themes nonetheless emerge that may highlight new avenues for exploring the role of captive-taking—particularly involving women and children—in early Mesopotamia:

> Prolonged, intensive interaction between Spanish colonial pobladores and nomadic and pastoral Indian societies required some mutually intelligible symbols through which cultural values, interests, and needs could be defined. Horses, sheep, guns, and buffalo hides spring immediately to mind as customary exchange items, but women and children proved even more valuable (and valorized) as agents (and objects) of cultural negotiation… Navajos and New Mexicans alike found that increases in market demand required wealthy sheep owners to

> expand their dependent labour pool, thereby lending new incentives to the regional slave trade. Illicit commerce in captives was part of a wider informal exchange system… low-grade military conflict between New Mexican and Navajo raiding bands began to redistribute resources, principally sheep but also women and children […] … the young male captives they seized could be sold to ricos as dependent herders (Brooks 2002: 216; 243).

Corvée Labour

Mesopotamian corvée labour was a 'form of forced labour…supplied primarily by the free population' (in the Ur III period known as $eren_2$ and $dumu\text{-}gir_{15}$) that could be employed in projects as varied as building and canal construction and maintenance, other infrastructure projects, military service, and certain agricultural work (Steinkeller 2013b). Steinkeller (2013b, 2015) suggests that the monumental buildings of Eanna in Uruk may represent products of some of the earliest corvée labour. Despite many enticing administrative parallels with Ur III texts, including the proto-cuneiform uses of ERIM (=$eren_2$?), the terminology in late 4th millennium texts is not yet well enough understood to determine whether or not they reflect the organization of corvée systems similar to those known in later Mesopotamia.

'Cooercion and consent'

A central concern in the study of early complex societies has been to determine the role of coercion or violence in the relationship between the 'state' (or other political authority) and the workforce. Anthropologists, sociologists, and archaeologists have taken various stances on this. While Carneiro (1970) and others have emphasized the necessity of violence in forcing communities to accept state-level power (most recently, Scott 2017), on the opposite end of the spectrum Sahlins (1972) argued that cooperation and community-binding ritual were the most significant strategies in the emergence of what he considered to be state-level organization.

Routledge (2014) explores the factors affecting why and how individuals come to be subjects within a state[10], seeing violence as ultimately central to the maintenance of sovereignty. Routledge also adopts Baines and Yoffee's distinction between political power and cultural networks that can be harnessed to support that power, but he adds the notion that not all early cultural forces were 'elite', describing instead more complex situations involving negotiation between different voices within early states. These discussions about consent to a political entity more broadly can be narrowed specifically to the situation in which individuals accept labouring for a given political entity. In early Mesopotamia, the 'rationing systems' described in the texts may tell us more about the physical minutia of implementing a particular socio-economic practice than the ideological underpinning of those practices.

However, at least two aspects of labour administration documents from various third millennium sources suggest the sometimes violent, coercive power of early Mesopotamian societies. The first is the recording of dead and, most importantly, fleeing workers (lu_2-zah_3) by scribes in administrative texts relating to labour organization (Englund 1990; discussion in Koslova 2013: 318 fn 14). Secondly, a more subtle argument comes from the level of remuneration provided to workers, which may have represented the approximate subsistence need of an individual (Nissen et al. 1993: 70). This argument is less convincing since the terse nature of the documents make it difficult to tease out the wider economic and social circumstances of ration-receiving workers. On the one hand, Steinkeller showed that groups of workers in the Umma region, which he translates as 'foresters', worked in family

[10] Or more precisely, a 'state-effect', drawing on Foucault to understand the state as a process rather than a static entity.

groups, and laboured for the political administration for only part of the year (1987); on the other, Dahl (2010) concluded in a study of Ur III period texts recording state potters, that workers who fled were incarcerated, and that workers 'could be attached to the same team year after year, with no or little time of their own, receiving all their allowances from the state and being subjected to sudden transfers from one place of work to another' (Dahl 2010: 291). Other workers within the Ur III state may have experienced different conditions, but many questions remain about the status and conditions of individuals in the Ur III workforce (e.g. Studevent-Hickman 2008). Contributions in the 2015 volume *Labour in the Ancient World* (Steinkeller and Hudson [eds]) tend to emphasize the cooperative and community-reinforcing aspects of collective labour (e.g. Richardson 2015), explicitly moving away from the emphasis by scholars such as Englund (1991).

Gender and age in labour organization

Gender is one of the most basic factors in the division of labour cross-culturally (Costin 1996). However, an approach considering intersectionality (Crenshaw 1989; Garcia-Ventura 2016) is useful for this study. Intersectionality takes into account other factors that overlap with sex or gender to form the identity of an individual, such as social status or class as well as age. This can be reflected in terminology: the English use of 'madam' carries with it not only gender but also age and sometimes class connotations, as does the English term 'wench'. In the context of this dissertation, intersectionality may apply to some cuneiform signs (whether or not representing specific lexemes), such as the sign KUR that appears to combine information about gender (male) with specific social or economic roles (probably 'slave', 'foreigner', or a person of a particular regional identity). In addressing

questions of gender and roles in the workforce, this dissertation must also address the suggestions that *female* labour in particular—and perhaps female slavery— may have been a significant contributing factor in the economic, social and political developments of the Late Uruk period and in early Mesopotamian urban economies more generally. The textual evidence for this is explored in chapter 7.

Childhood in the ancient world has also become a topic of research in the past few decades (e.g. Cohen 2007). Garroway 2014 provides a holistic discussion of childhood in the ancient Near East, particularly from the Old Babylonian period onwards, following on earlier studies such as Limet 1980. For the third millennium, Bartash (2015, 2016) has begun to synthesise the material. Children in third millennium economic documents primarily occur along with female workers, and therefore studies of childhood are often tied to studies of labour organization.

Iran and Mesopotamia

The volume *Ancient Iran and Its Neighbours…* (Petrie ed. 2013) was conceived as a response to the title *Uruk Mesopotamia and Its Neighbours*…(Rothman ed. 2001) and reflects a shift in research away from southern-Mesopotamia-centric approaches, a shift that began most clearly with the results of excavations in Northern Mesopotamian sites such as Tell Brak (Ur et al. 2003, Oates et al. 2007). In drawing on both proto-cuneiform and proto-Elamite material, this study hopes to contribute to the growing body of research that highlights cultural interaction and regional variation, rather than narratives of dominance or 'core' and 'periphery'. The proto-cuneiform material remains more heavily represented in this dissertation, due to space constraints and to the nature of the evidence available (proto-cuneiform benefits from

the possibility of comparison with later cuneiform tradition). Admittedly, the proto-Elamite chapters sometimes become the point of discussion for comparison with proto-cuneiform, whereas the reverse is less often the case. These imbalances are mostly a function of the state of our knowledge, and it is hoped that this study could facilitate further in-depth studies of proto-Elamite in its own right.

Overview of chapters

Chapter 2 sketches the basic archaeological background for discussion of the texts. Chapter 3 explores the imagery on cylinder seals and their impressions that have been used in discussions of labour organization. As a tool associated with scribal culture, sealing practices and seal iconography present an important complement to textual studies. Chapters 4 and 5 deal with the nature of proto-cuneiform and proto-Elamite writing, and outline the types of texts related to labour organization in each writing system. Chapters 6 through 8 examine, through careful attention to accounting contexts, the use of the signs for male, female and child 'workers' in turn, in both proto-cuneiform and proto-Elamite scripts. Chapter 9 presents the conclusions drawn from this analysis, summarising the ways that gender and other social identities overlapped in the terminological sets used by proto-cuneiform and proto-Elamite scribes.

Chapter 2: Archaeological background

Introduction

The texts discussed in this dissertation come from a number of sites across the ancient Near East and span the late Uruk and Jemdet Nasr periods in Mesopotamia, and the partly contemporary proto-Elamite period in Iran. The great majority of proto-cuneiform texts comes from Uruk, and a similarly large majority of known proto-Elamite texts come from Susa; at the same time, both proto-cuneiform and proto-Elamite texts found at other sites show the writing systems exhibited a high level of standardisation, so that their contents can be meaningfully discussed together. Despite a chronological overlap, proto-cuneiform and proto-Elamite texts texts have never been recovered at the same site, and consequently they have been used to help define distinct cultural spheres (see fig. 2.2).

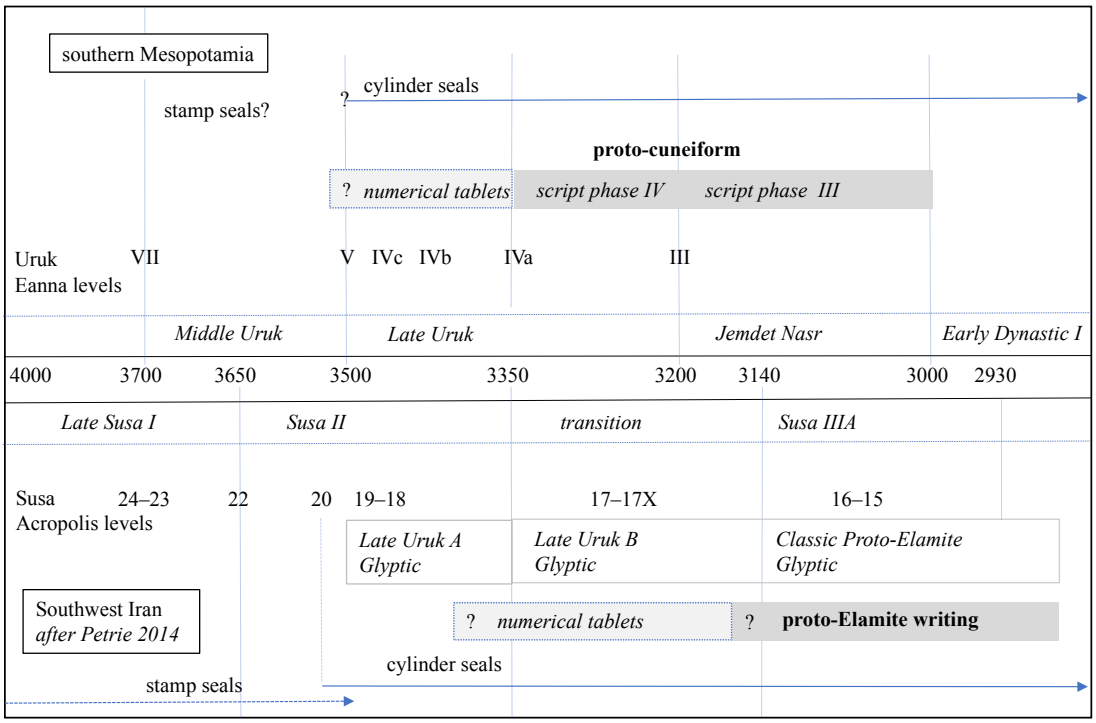


Figure 2.1: Periodisation. Considerable uncertainty remains regarding both absolute dating and chronological correspondences between southern Mesopotamia and Iran.

Late Uruk (3500–3200) and Jemdet Nasr (3200–3000) periods

The Late Uruk period (c. 3500–3200)[11] has been characterised as a time in which aspects of material culture spread outward from Southern Mesopotamia (and, it has been increasingly recognized, southwestern Iran [e.g. Pittman 2013]) across the Near East. The so-called 'Uruk expansion' is now understood to have lasted approximately the extent of the Middle and Late Uruk periods (c. 3700–3200 BC) with variation in the date and nature of southern influence at individual sites (Stein 1999: 91; Rothman (ed) 2001). While Algaze's initial (1989; 1993) and modified (e.g. 2001; 2005; 2008; 2013) 'Uruk World System' theory has been heavily criticized for over-emphasizing southern control and southern advantage (e.g. Stein 1990, 2014; Steinkeller 1993; Butterlin 2003; Emberling 2011), many material culture correlates of the Uruk phenomenon at sites across northern Mesopotamia, Syria and even western Iran continue to be understood as originating in Southern Mesopotamia (Akkermans and Schwartz 2003: 181–211). These Uruk-related features include architectural forms and decoration, the cylinder seal, and a variety of ceramic forms (Algaze 1993). On the other hand, recent interpretation of some glyptic material (Pittman 2013) and perhaps even the widely-dispersed beveled-rim bowls (Potts 2009) suggest at least some traditional aspects of the Late Uruk cultural assemblage may be better characterised as 'Southern Mesopotamian *and/or Susiana*' in influence.

Chronological understanding of the fourth millennium archaeological sequence is imprecise. The poor recording of ceramics from the deep sounding in Uruk under the

[11] Dating is conventional. Rothman ([ed] 2001:7) extends the final phase of the Late Uruk period, Uruk IVa (Eanna), to 3000 BC. A forthcoming doctoral dissertation at Oxford University, applying a Bayesian approach to available radiocarbon dates, suggests Uruk IV may be as early as 3500–3300, and Jemdet Nasr 3300–3100 (M. Wencel, in prep. 'Towards an Absolute Chronology of Early Mesopotamia: a Radiocarbon Perspective'). See also Van Ess (2015).

limestone temple of level V (early Late Uruk) means that additional evidence is necessary to re-assess chronological relationships between Uruk and other Mesopotamian sites (Nissen 2002). Absolute dating for the fourth to early third millennia BC remains uncertain, and more radiocarbon samples for the Late Uruk and Jemdet Nasr periods are needed, in particular to apply Bayesian statistical methods to correct for a plateau in the radiocarbon curve due to atmospheric fluctuation occurring around this time which skews interpretation of radiocarbon results (Dahl, Petrie, and Potts 2013).

By convention, the earliest proto-cuneiform (Uruk IV script phase) is dated to the end of the Late Uruk period (Eanna IVa, between 3350–3200 BC) and the majority of texts to a second phase (Uruk III) during the following Jemdet Nasr period (3200–3000 BC). The re-organization of architectural layout at Uruk that occurred following building phase IVa is thought to coincide with the end of the Late Uruk period, and, roughly, with what was is often described as a 'collapse' of the Uruk 'world system'—by current understanding this collapse is situated just *after* the invention of writing (Uruk IV script phase) but *before* its full fluorescence in the Uruk III script phase: this chronological point is often lost in the presentation of straight-forward narratives on a supposed link between writing, increased social complexity and urbanism, but has occasionally been noted (e.g. Pollock 1992: 331; Woods 2015: 140).

At the end of the Late Uruk period, a number of sites beyond Southern Mesopotamia with previously southern influence were abandoned (Habuba Kabira South, Jebel Aruda, Sheikh Hassan, Qraya, and Tell 'Abr) and sites with mixed 'southern' and

local features saw the withdrawal of southern features (Brak, Leilan and Hama) (Schwartz 2001). The Jemdet Nasr period was a time of regional differentiation. This includes Susiana, which at the end of the Susa II (Late Uruk), evidenced a shift away from Uruk-related ceramic forms. The population of Southern Mesopotamia continued to grow, particularly at Uruk (Adams 1981: 81; Finkbeiner 1991: 194). In architectural terms, both the Late Uruk and Jemdet Nasr periods of Southern Mesopotamia are marked by Riemchen bricks—whereas the following Early Dynastic I period produces plano-convex bricks (Finkbeiner 1986: 56).

Proto-Elamite period

The proto-Elamite period in Iran corresponds to part of the Late Uruk period[12], the Jemdet Nasr period and beginning of the Early Dynastic period in Mesopotamia, and is conventionally dated between 3200–2900 BC. Proto-Elamite tablets are so far known from eight sites (fig. 2.2). These are dispersed across Iran, such that Proto-Elamite had a wider (and more geographically diverse) distribution than contemporary proto-Cuneiform—although three of these sites producing Proto-Elamite tablets have turned up only one tablet each (Shahr-e Sokhte, Tal-e Ghazir, and Tepe Ozbaki).

The origins of the proto-Elamite culture may be indicated by abandonment (or re-organization) and resettlement of sites across Iran (at Tal-e Malyan, Sumner 1986; at Susa Potts 1999/2016: 55; at Arisman, Helwig 2013; at Tepe Yahya Lamberg-

[12] Taking the radiocarbon irregularities into consideration, Dahl, Petrie, and Potts (2013) conclude that there may be some chronological overlap between Southern Mesopotamian Late Uruk material and proto-Elamite material from Iran—although further radiocarbon samples are needed to establish more precise dating.

Karlovsky 1971: 88, Mutin 2013: 187 ff.) — however, Petrie (2013) questions whether the evidence is clear on this point, particularly in the interrupted architectural remains at Susa.

At Susa, the fluctuation between westward and eastward/highland looking influences observable in the site's long history was earlier characterised as an effect of an 'ethnic duality' (Scheil 1905: vii [in Abdi 2003]; Amiet 1979); however more recent approaches have tended to emphasis the indigenous traditions of Susiana and their alternating relationships with the highlands and with Mesoptomia (Petrie [ed] 2013). During the Late Uruk period at Susa (Susa II), the Southern Mesopotamian influences were dominant, while during the proto-Elamite period, the elite occupants of Susa shared aspects of material culture with the Zagros and highland Iranian sites.

The term proto-Elamite was introduced by V. Scheil (1905: 59 ff) and initially referred to the tablets as well as a characteristic glyptic tradition excavated at Susa; it was then extended to refer to a short-lived 'culture'[13] producing the tablets (Abdi 2003 for overview of the history of the term). Other aspects of material culture can be identified that mark out 'proto-Elamite' sites—for example Helwing (2013) has identified Arisman as a proto-Elamite site without texts—but at the same time each site also exhibits local character and incorporates 'proto-Elamite' cultural markers in different ways and to different extents (Petrie 2013: 401).

[13] Proto-Elamite has also been considered as a 'phenomenon', a 'horizon', a 'civilization' and a 'universe' (Petrie 2013: 15 for summary).

Clarification of what is meant by 'proto-Elamite' is ongoing (Abdi 2003; Petrie 2013), although the writing system continues to play a key role. Along with tablets and the classic proto-Elamite glyptic style (chapter 3), certain ceramic forms are usually considered archaeological markers of proto-Elamite contexts. At Tepe Yahya, for example, Mutin (2013: 57) identifies four different components of the ceramic record, and defines the Proto-Elamite component as including 'beveled-rim bowls, low-sided trays, carinated bowls, a plain bowl, pedestal-goblets, spouted vessels and spouts [and] decorated jars…'. In short, proto-Elamite forms are at least partly a continuation of the Late Uruk ceramic markers (see e.g. Helwing 2013).

F. Desset identified a common architectural feature at Godin Tepe, Susa, and Tal-e Malyan that mark proto-Elamite tradition—labelling it the 'double doors central hearth room', he identifies at each of those three sites: 'rectangular hearths built in the middle of long walls' (2014: 10) flanked by doors into other rooms, and in some cases further parallels in the organization of rooms around these rectangular hearth rooms. Possible precursors for the long-wall hearth rooms were identified at Tepe Ghabristan and Tepe Sialk. Recent approaches have also begun to disentangle the traditional markers of the proto-Elamite, in order to help think more critically about the link between objects, underlying social behaviours, and identity construction (Desset 2014; Petrie 2013). Petrie points out that, for example, 'the reasons behind the adoptions of specific ceramic vessel forms are likely to be variable and moreover, might not be the same reasons why *proto-Elamite* writing and administrative tools were adopted' (2013: 401).

C.C. Lamberg-Karlovsky discussed the proto-Elamite phenomenon, including its characteristic writing technology as an 'echo' of the late Uruk expansion, and both to represent ultimately 'failed' experiments in centralisation (1978, 1989: x). With chronological adjustments, this model may be innappropriate. Such a perspective might be criticised from the point of view of increasing awareness of indigenous complexity and agency in the development of fourth–early third millennium Iranian societies. As Abdi (2003: 144) summarises, 'Studies that emphasize [proto-Elamite socieites] in a framework based on [Jemdet Nasr societies] are arguably a creation of the modern scholarship's obsession with comparative studies and negligence of indigenous developments left over from the enduring culture history approach in Near Eastern archaeology'.

As mentioned above, the question has in recent years been posed as to whether the 'Uruk-related material' at various sites (e.g. at Godin Tepe) ought to be understood as influence from lowland Khuzestan rather than from Southern Mesopotamia. The difficulty in assigning Godin Tepe to either the Southern-Mesopotamian influenced or Proto-Elamite Iranian influenced worlds in part highlights the current ambiguities in the archaeologist's set of terminology (Abdi 2003). It is probably best to see Khuzestan, with strong evidence for administrative technologies preceding writing, to represent precursors to the proto-Elamite writing system at least as influential as any precocious Uruk IV developments in script that may have slightly preceded proto-Elamite. Susa has usually been regarded as the most likely origin for the script and therefore the proto-Elamite scribal communities that appeared at other sites (contra Sumner 2003). Both the precursors to writing and the largest number of known proto-

Elamite texts have been found at Susa[14], and the high level of standardisation of script between Susa and other sites suggests that there were close ties at least between the scribal communities of these sites.

Settlement patterns and other data have been used to support the idea that the proto-Elamite period was one of increased nomadism (Miller 1985; Sumner 1986; Alizadeh 2010; Alden 2013). Miller (1985) explained the Juniper deforestation visible following the proto-Elamite period in relation to a program of wood use by a population not otherwise visible in the settlement record of the area. However, Potts (2014a) has questioned the emphasis in modern scholarship on the prevalence of nomadism across early Iran, in the face of limited evidence, arguing instead that there is little or no evidence for reconstructions of large-scale, full-time nomadism—although transhumance certainly existed in the form of 'a few specialists, not… entire tribes' (2014: 41).

The proto-Elamite phases end roughly at the same time at various sites, with architectural breaks and the disappearance of the writing system. At Tepe Yahya, abandonment of the site has led to characterisation of a proto-Elamite culture there as a 'foreign' community of short duration, with material culture that was to some extent distinct in character to what came before and after (Lamberg-Karlovsky 2001: 270).

The reason that the proto-Elamite writing system was used for such a short period of time, in contrast to the continued development of proto-cuneiform into cuneiform,

[14] S. Saeedi (presentation, 2016) claims that many of the pre-cursors to writing have now been found at Sofalin (results remain mostly unpublished), on a large enough scale to warrant reconsideration of the 'spread' of writing from Mesopotamia–Susa–the rest of Iran.

remains obscure. Several possible factors have been proposed: a lack of lexical tradition to help codify the writing system (Dahl 2013: 257); too small a scribal community (perhaps even a single family) with tight control over the technology, whose disappearance also signalled the loss of the writing-system (Dahl, Petrie, and Potts 2013); or the failure of a 'centralising' social experiment (Lamberg-Karlovsky 1978, see above). In the north-central plateau proto-Elamite sites appear to have, over time, been replaced with an expanding Early Transcaucasian/Kura-Araxes culture from the Caucasus region (Potts 2012; Batiuk and Rothman 2007).

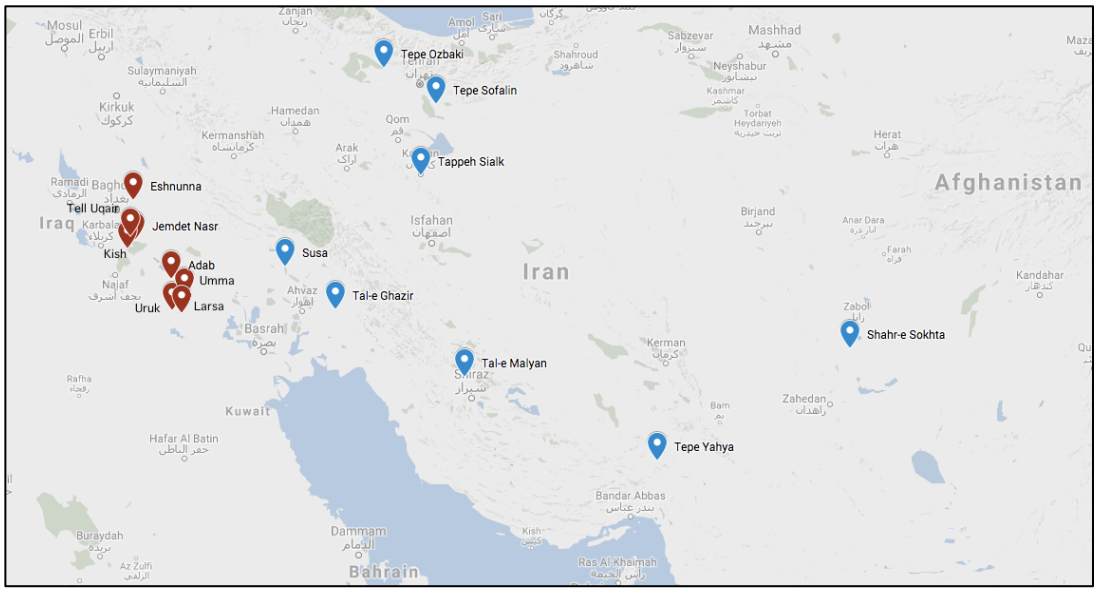


Figure 2.2: Distribution of proto-cuneiform (red) and proto-Elamite (blue) texts

Beveled-rim bowls and shared labour organization traditions

There is great potential for combined archaeological and textual study at a given site (e.g. Sallaberger and Pruß 2015) which is unforunately beyond the scope of this dissertation. However, in providing the general background of the text corpora, one aspect of material culture can be mentioned for its importance in both archaeological and textual studies of labour organization: the beveled-rim bowl. Beveled-rim bowls,

along with other more-or-less consistent ceramic forms, are markers of all of the above contexts—Late Uruk, Jemdet Nasr, and proto-Elamite (with some variation, see Mutin 2013: 63). The bowls were quickly made by mould or hand, easily disposable, and often found in large groups together. They are known from sites across the ancient Near East, as far as Miri Qalat in Pakistan, although they are found in largest numbers in western Iran and Mesopotamia (Potts 2009).

Nissen (1970) proposed that the bowls are an archaeological correlate to a(n initially) Late Uruk rationing system, arguing that they may have been containers to hold grain rations. He cites their approximate size (between .5 and 1 litre), suitable for a daily 'ration' by later Mesopotamian parallel. The size need not be precise if a separate vessel, such as a wooden ladle, were used to actually measure the ration. Secondly, Nissen cites the bowls' resemblance to the proto-cuneiform sign NINDA, used in the compound sign GU_7, used in Late Uruk texts that often appear to record grain distributions and calculations (chapter 5a).

A long list of literature has been produced giving various other interpretations of the beveled-rim bowls in both Mesopotamia and Iran[15]. This includes the suggestion that the bowls were used for offerings (Beale: 1978; Nicholas 1987:71), for salt processing (Buccellati 1990), for serving ale (rather than loose grain or bread) to workers (Damerow 1996; Pollock 2003: 29–31, 2012: 161; Bernbeck 2009: 54), or as bread-moulds (Schmidt 1982; Millard 1988; Chazan and Lehner 1990; Potts 2009). The sign NINDA in later Sumerian cuneiform is used both to indicate baked bread (ninda) and rations ($ni\hat{g}_2$). D. T. Potts (2009) supported the idea that bowls represented the spread

[15] Potts: 2009 also provides a detailed overview.

of a popular new culinary technology in baking leavened bread and that the presence of these bowls at such far-flung sites may not represent the spread of Mesopotamian administrators or rationing systems. The use of beveled-rim bowls as bread moulds would not preclude their use in a redistributive system, whether for daily sustenance for dependent household workers or others in return for communal labour projects (Nissen 1988: 83; Pollock 2012: 156), perhaps relatedly, in ritual contexts of communal consumption (e.g. D'Anna and Jauß 2015). Pollock (2003: 29–31; 2010:160; 2015) suggests that the nature and size of the vessels indicates that whatever was in the bowls was probably meant to be consumed on the spot (not 'taken home'), and understands this to represent a clear contrast with the later third millennium rationing systems based upon monthly allocations. D'Anna and Jauß (2015) explored the archaeological context in which similar bowls were found at Arslantepe, noting their presence in a 'public building' of the phase VI A (3300–3000 BC) that also produce sealings, suggesting a courtyard may have been the place for distribution and consumption of what she describes as a possibly 'impersonal, and even 'alienated' commensality' contrasting with the evidence of elite feasting in a 'shrine' of the residential area (2015: 124 ff.).

After the Late Uruk and Jemdet Nasr periods, the bowls were slowly phased out and replaced by other forms (Potts 2009). A type of similarly styled and mass-produced crude bowls, but with a taller vessel shape, known as 'flowerpots' (*Blumentöpfe*) have been found at Uruk and other sites and appear to have overlapped with the latter period of use of beveled-rim bowls (Strommenger 1980). The 'flowerpots' may also have been related to redistribution or institutional consumption. Englund (1998:165–

7) suggested that the cuneiform sign $sila_3$ may depict this vessel[16]. A group of dozens of these bowls has recently been discovered in a Late Uruk period room at Italian excavations at Tell Surghul (ancient Niğin). They were found lined up mostly upside-down, with remains of food inside, including grain, fish bones, and unidentified organic matter. The excavators have interpreted the room as a storage room within a public building, perhaps particularly used to store and prepare products for redistribution (Nadali and Polcaro 2015).

Whatever the product held by the beveled-rim bowls, their wide distribution marks their ability to transcend the cultural 'boundary' represented most obviously by the use of two different writing systems. The bowls are found at sites both with and without the discovery of proto-cuneiform or proto-Elamite tablets; in Iran, sites with beveled-rim bowls have been taken as evidence of 'Mesopotamian influence' (e.g. Tepe Sialk and Tal-e Iblis, Caldwell 1967) when dated to the Late Uruk period, and proto-Elamite markers when dated to the proto-Elamite period (e.g. Tepe Yahya, Mutin 2013). Their relationship with labour organization and with administrative activities in the proto-cuneiform and proto-Elamite texts remains unclear, but if proto-cuneiform NINDA indeed depicts a beveled-rim bowl, then some of the redistributive activities documented by scribal administraters may have involved the use of the bowls. A similar proto-Elamite sign has not been identified, but a proto-Elamite seal depicting a (bovine) scribe at work may also show a beveled-rim bowl in the upper corner (Pittman 1993: 237, seal Amiet 1980: 568).

[16] $Sila_3$ is known in later Sumerian as a measure equivalent to approximately .8 litre. Johnson (2015: 192) discusses the use of proto-cuneiform $SILA_3$ in relation to distributions of 'highly valued goods, in particular cuts of meat and dried fish'; Englund discusses it as a standard measure in relation to dry rations and dairy products, e.g. Uruk text W 21682 (Englund 1998: 161).

Demographic patterns in Mesopotamia and Iran

Settlement data have been drawn on in a number of studies to discuss the movement of peoples, including between Susiana and Southern Mesopotamia, during the fourth millennium (e.g. Wright and Johnson 1975, 2001; Adams 1981; Pollock 1999, 2001). In the first half of the fourth millennium, there may have been an increase in settled population (early-mid Susa II period) in Susiana as evidenced by an increase in medium-sized settlements along with Susa increasing to c. 25 hectares (Wright and Johnson 1985; Potts 1999: 55–6). The ceramic tradition of Susa II was Mesopotamian in style, and various characterisations of this have been put forward, including Amiet's development of the notion of an 'ethnic duality' (1979) in Susiana that saw the ('native') Mesopotamian element at the fore during this time. Alternately, Potts understood the Susa II period in Susiana to represent 'agriculturalists and their families, potters and other craftsmen who moved into the available land in Khuzestan and founded new settlements' at the beginning of the Uruk period (1999/2016: 63). Similarly, Pollock (2001), postulated that it was likely from the immediate vicinity of *Uruk* rather than the Nippur-Adab area of Southern Mesopotamia[17] that migrants into Susiana may have originated, essentially as political refugees escaping an increasingly oppressive urban administration in Uruk, citing evidence including the seal impressions from Late Uruk period Uruk that emphasized bound and beaten prisoners.

H. T. Wright (2001: 146) characterised the later fourth millennium in Southern Mesopotamia as a period of 'differential growth, accelerating intraregional conflict,

[17] For the separation of Uruk and Nippur-Adab areas, also Adams 1981.

the emergence of very large polities, and their collapse', during which Uruk maintained population growth. Wright and Johnson (1975) showed that during this period—which they consider to be the 'era of first state formation'—the population of Susiana probably decreased from its Susa II level. Similarly, Hopper and Wilkinson (2013: 39) describe in Khuzestan a 'significant decrease in settled population in the mid-to late fourth millennium, which continues to the early third millennium BC'. In late fourth millennium Southern Mesopotamia on the other hand, urban centres grew in population with a concurrent emptying of the country-side (Adams 1981; 2014). The high rate of population growth at the end of the fourth millennium in Southern Mesopotamia, particularly at Uruk, may indicate the movement of peoples into the area from surrounding regions (Pollock 1999: 71). This roughly corresponds to the 'break' in cultural contact and the growth of separate proto-cuneiform and proto-Elamite cultural spheres. Chronological and other difficulties remain; Petrie (2013:20) cautions that such discussions of changes in population and settlement in Iran in particular are based on limited survey and excavation, and would benefit from additional comparative data.

Script Phases

Precursors to writing

During the 4th millennium prior to the development of proto-cuneiform, bullae with seal and token impressions, and numerical tablets began to appear at sites spread widely across the ancient Near East (Schmandt-Besserat 1992:115 fig. 61, 131 fig. 79; Englund 1998:48, 1999:35 fig. 2.2). Numerical tablets are known from: Iran at Susa, Chogha Mish, Tepe Sialk, Godin Tepe, Tall-i Ghazir, and possibly one from Tepe Sofalin; Mesopotamia at Uruk, Nineveh, and Khafajeh; and Syria at Habuba Kabira,

Jebel Aruda, and Tell Brak. The Tell Brak tablet was found in a good stratified context below a radiocarbon-dated hearth with a result of c. 3500 (cal) BC (Oates 2002: 117). At Uruk, some of the numerical and numero-ideographic tablets were found in the same context as large numbers of Uruk IV texts in square Qa XVI,2 ; seven numerical and three blank tablets were found in the square immediately west of this, Pe XVI,3 in a 'layer of sherds belonging to level IV' (Englund 1994: 37 and 13 fig. 2). The largest number of numerical tablets have been found at Susa, dating to levels 18–17 Acropole (Potts 1999/2015: 61), the periods preceding the invention of proto-Elamite.

These accounting technologies were the precursors to proto-cuneiform and proto-Elamite writing. While proto-cuneiform is currently understood to have developed slightly before proto-Elamite, near the close of the Late Uruk period, this does not imply that the numerical tablets at all sites are attributable to a 'Mesopotamian', or specifically pre-proto-cuneiform tradition— for example, numerical tablets at Godin Tepe and Tepe Sialk are arguably more closely related to the following proto-Elamite tradition (Weiss and Young 1973; Pittman 2001, 2013; Dahl 2013; but see Matthews 2013; Petrie 2014: 142, 151), and Susa's wealth of numerical tablets has even been used to suggest the technology could have been a lowland Iranian invention (Pittman 2013). Overall, a picture of parallel developments in early accounting technologies prior to the invention of writing emerges.

Proto-cuneiform script phases

The invention of proto-cuneiform script at Uruk (Uruk IV script phase) dates approximately to the Uruk IVa building phases (c. 3350–3200) at the end of the Late

Uruk Period[18]. The two script phases, Uruk IV and Uruk III, were initially named after building phases in Eanna at Uruk, but complications in locating tablet finds within particular phases and sub-phases led to the subsequent distinction between the building and text phase terminologies (Nissen 1986, 1987). Texts of the second script phase, Uruk III, are nonetheless considered to date to the Jemdet Nasr period (c. 3200–3000) that is represented at Uruk by the building levels Uruk IIIc–a.

Because the texts were found in secondary contexts, i.e. in rubble and trash used as construction fill during later building phases, establishing the stratigraphic origin of Uruk IV and Uruk III texts is difficult (Englund 1998: 38; Nissen 2002). Nonetheless, a combination of information on the associated architecture of text finds on the one hand, and internal characteristics of the proto-cuneiform documents on the other, has been used to provide the dating sequence IV–III[19]. Dating texts based upon paleographic and other internal text features can only be hypothetical, but the methodology is given some confirmation in that groupings of texts with similarly more 'archaic' looking features are consistently identified as relating to earlier stratigraphic phases (Nissen 1986). On the other hand, the continued difficulties of Eanna's stratigraphy—including the use of tablet finds to assign building levels to archaeological phases in the first instance—should urge caution (Strommenger 1980).

[18] The archaeological evidence was ambiguous as to the specific building sub-phase to which these earliest texts belonged, but Nissen (1986) reasoned that they probably belonged to subphase IVa (rather than IVb) given their close comparison in paleographic terms to the next script phase Uruk III associated with the Uruk III (c–a) building phases.

[19] Nissen (1986) initially included also differentiation of Uruk III3–1 texts, although these designations are rarely used, since assigning texts to one of those levels based upon available archeological evidence is usually not possible.

For example, Eichmann (1989: 79–90, and review by Crawford 1991: 357) discussed the possibility that Temple C might belong to building level III, while it was formerly understood to have been constructed near the beginning of phase IVa (Lenzen 1974; Perkins 1949/1977: 123; Crawford 1991:26). This building in fact provided the only group of texts which may have been found on a floor in Eanna, and those texts were both internally and externally (based on an Uruk IV phase building assignment) dated to Uruk IVa, securing the date for the earliest script phase (Nissen 1986, 1987: 36–40). Nissen (2002: 3) includes Temple C in a plan of level IVa[20].

Uruk IV script phase texts have only been excavated at Uruk (around 1,790 in number), while around sixty texts from the antiquities market have also been tentatively assigned to this script phase by the CDLI. Texts assigned to the Uruk III script phase have been excavated from Uruk (c. 3,112) and Jemdet Nasr (241), as well as in small numbers from Tell Uqair, Tell Asmar and Kish; Uruk III phase texts from the antiquities market have tentatively been attributed to Tell Uqair, Umma, Adab, Larsa and Kish (Englund and Grégoire: 1991). The great majority of proto-cuneiform texts have come from Uruk, with 4,902 Uruk IV–III phase texts catalogued on the CDLI[21].

Proto-Elamite script phases

Proto-Elamite texts may be divided into three script phases: early, middle, and late (Dahl, Petrie, and Potts: 2013). As with proto-cuneiform, these are based upon internal script features, combined with occasional links to stratigraphic information,

[20] Nissen 1987: 36–40 for his reasoning.
[21] Accessed March 23, 2017

in this case from Susa. While the great majority of texts were found in early excavations and little reliable stratigraphic or contextual information can be obtained, later excavations (Le Brun 1971) produced stratified numerical tablets (in levels 18.2–17B) a few unstratified proto-Elamite tablets[22], and proto-Elamite tablets in levels 16C, 16A, 15B–A, and 14B (20 tablets in total). Dahl, Petrie, and Potts (2013) propose that in an early phase the writing system spread to Tal-e Ghazir, about 200 km to the southeast of Susa in Ramhormuz county, Khuzestan, and to the north on the Central Plateau, at Tepe Sialk, and Tepe Ozbaki. Following this, it spread to Tal-e Malyan in Fars, and Tepe Yahya and Shahr-i Sokhta in southeastern Iran.

[22] see comments in Dahl, Petrie and Potts 2013: 355 ff.

Chapter 3: The glyptic evidence for proto-literate labour organization

Introduction

Seal images and sealing practices complement the textual evidence for labour organization and redistributive practices from the Middle Uruk through Jemdet Nasr periods of Mesopotamia and Iran. Seals can be studied in various ways and have been approached from both art historic and archaeological perspectives. With respect to labour organization, the seal imagery may be used to help characterise the activities monitored by the scribal administration, since sealing technology was part of a scribal 'tool kit'. As with other aspects of material culture, the geographic extent of seals and sealings can help determine changing cultural links across the broader ancient Near East, which may in turn highlight shared cultural traditions of production and consumption. The physical practices of sealing can also be explored (e.g. Dittman 1986b; Frangipane [ed] 2007)—sometimes in conjunction with attention to seal scenes—in order to understand how actors with seals had control, as individuals or representatives of households or political institutions, over the products made by members of society.

This chapter focuses on the seal imagery related to labour and production in order to help characterise the possible production or distribution contexts that scribal administrators were involved in organising. The focus was chosen because of the way that seal imagery from both Mesopotamia and Iran has played important roles in discussions of social and political changes in these periods. Although the evidence of seal scenes may sometimes help identify activities and products of concern to

administrators, in the majority of cases seals do not directly depict the product or labour which the seal owner is controlling. Instead seal images may represent group cultural identities, serving to identify either particular individuals or administrative institutions through culturally significant symbols or scenes (Nissen et al. 1993; Brandes 1979; Frangipane [ed] 2007), or in some cases may be described as commodity branding (Wengrow 2008). Therefore, it is in a variety of ways that scenes of labour and production on cylinder seals can provide insight into the scribal culture and the nature of administrative control in proto-literate urban societies.

The chapter first presents an overview of the scenes of production that have been identified in seals from Middle Uruk (3700–3500 BC) until the Jemdet Nasr (3200–3000 BC) and Proto-Elamite (3100–2900 BC) periods. It then offers a case-study of a particular style of seal that has been central to discussions on gender and labour organization: the pigtailed figures. Following on this, the chapter discusses the methodological problems with using seals to study gender and labour organization.

Identifying work and workers in seals

This section summarises the images of workers and production known on seals from the mid-fourth to early third millennium at sites where scribal elites first emerged[23]. 'Work' scenes are categorised in figure 3.1. A number of difficulties arise when attempting to define 'work' scenes in seals. Objects and tasks undertaken may be difficult to recognize. For example, one Late Uruk period seal image (Rova 419) is described by Collon (1987/2005: 148) as 'fruit-picking?' and by Bréniquet (2016: 19

[23] This chapter limits its focus to scene with human or anthropomorphic figures engaged in production.

fig. 5h) as ‘flax processing?’. Schematic seals in which seated figures have hands upraised in the air, sometimes with vessels, may depict ‘ritual’ activity rather than production of pottery (Boehmer 1999; Asher-Greve 1985, 2008). In fact, production or scenes related to economic activity (such as carrying objects) are not always easily separated from ‘ritual’ or other social behaviour, and in any case labour itself is often ‘ritualised’ (e.g. D’Anna and Jauß 2015). Scenes that appear to depict figures weaving may be interpreted as high-status females engaged in a culturally significant activity (Bréniquet 2016) that conveys a message other than a ‘strictly’ economic one.

Despite these difficulties, three prominent traditions of representing working figures on seals can be distinguished:

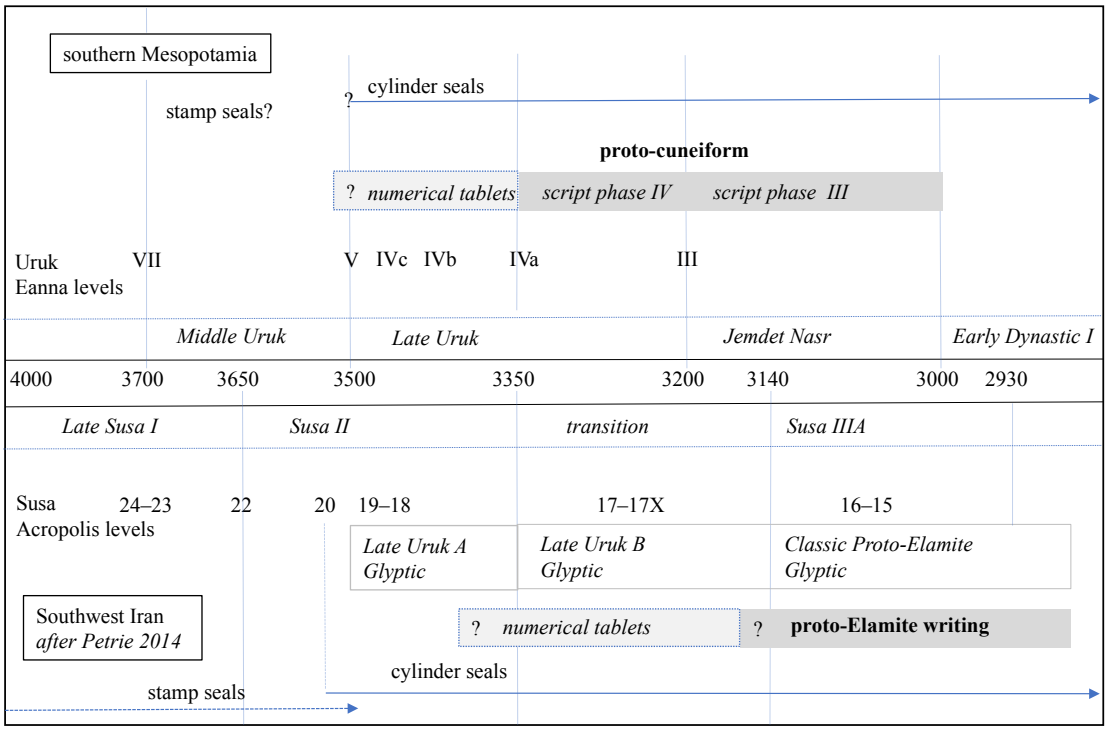
(1) A Middle Uruk through Late Uruk A[24] (c. 3500–3350 BC) tradition specific to Susiana, of depicting a wide variety of tasks by (often) bald, naturalistically-rendered figures. These are carved in a ‘naturalistic’ style contrasting with schematic seals (3) below.

(2) A proto-Elamite tradition (c. 3200–2900 BC) in which some of these tasks continue to be depicted, but in which animal actors on their haunches and wielding tools have replaced humans.

(3) Trans-regionally attested ‘schematic’ seals in which groups of figures engage in activities that appear to represent production. These include the ‘pigtailed’ figures discussed below. Dating of this style is difficult but they can be roughly assigned to the Late Uruk and possibly early Jemdet Nasr periods.

In addition, a fourth, more disparate category, Pittman’s (2013) extension of Dittman’s (1986b) ‘interregional motifs’ may also include some themes relevant to production, redistribution, and the workers involved in this. These motifs developed from the mid-fourth millennium through the Early Dynastic I period.

[24] Pittman (2013: 294) following Dittman (1986a), Late Uruk A = Eanna V–IVb and Susa Acropole 19–18, prior to the ‘break’ between the regions that saw proto-cuneiform develop (Eanna IVa) at Uruk, with a ‘transitional’ phase in the imagery of Susa Acropolis 17 (Late Uruk B) followed by the proto-Elamite imagery of Acropolis 16 (Pittman 2013: 327).



Activity	Schematic *Late Uruk* (c. 3500–3200 BC)	Naturalistic *Middle/Late Uruk* (c. 3700–3200 BC)	Naturalistic *Jemdet Nasr* (c. 3200–3000)	Classic Proto-Elamite *Proto-Elamite* (c. 3200–2900 BC)
Textile production and packaging	✓	✓		✓
Plowing and agriculture		✓		✓ (?)
Ceremonial threshing		✓		
Workers with pots	✓	✓		✓
Herding (with a human figure)		✓	✓	
Carrying products	✓	✓	✓	✓
Workers at granaries		✓		✓
Hunting		✓	✓	
Churning or dairy production	✓	✓		
Scribal activity		✓		✓
Troops with bows		✓	✓	✓
Construction work		✓		

Figure 3.1: Periodisation of Mesopotamia and Iran. Below: Types of workers and production in seal images from southern Mesopotamia and Iran

Seals and production imagery at Susa and other Iranian sites

Susa has produced the largest number of seal impressions and seals from the late fourth millennium, with Rova cataloguing 436 for the Late Uruk period[25]. The proto-Elamite seals (both stratified and those dated stylistically) add several hundred more examples (Roach 2008). These may be divisible into early, middle and late proto-Elamite period groups (Dittman 1986b), and into four stylistic groups— 'glazed steatite/piedmont', 'wheel-cut', 'incised', and 'classical' (Pittman 2003: 108)[26].

Middle and Late Uruk Susiana

Dittman (1986b) examined seal images from his 'Late Uruk A' period at Susa (Acropole 19–18, see figure 3.1), and interpreted them as representative of different administrative offices, including 'storage units', 'industrial units', 'herding units', 'hunting units' etc. These units were identified by seal scene content, for example with scenes of domesticated animals representing the 'herding unit'. He then examined the interaction of these units through objects with multiple sealings, and through some attention to the kind of object sealed (primarily doors versus containers), in order to establish a hierarchy of importance of these various units. On the one hand, scenes represented in some seals probably do reveal the industries and activities of interest to individuals who own and use those seals. On the other hand, in

[25] Rova catalogues 29 unique seal images from Acropole level 18, and 27 from Acropole levels 17a-b, with another 380 of unknown context (Rova 1994: 311–21, Acropole 18 Rova nos. 92–120 ; Acropole 17 nos. 121–47 ; Susa context unknown nos. 151–530). This excludes the 'Classic Proto-Elamite' seals and seals of unknown context dated stylistically to other periods.

[26] An alternate categorization system appears in the doctoral dissertation of Roach 2008

most cases it is not clear that seal scenes directly represent administrative offices engaged in those activities[27].

Susiana's Late Uruk production scenes

Pittman considers worker and production scenes, which originate in the Middle Uruk period, to be 'the hallmark theme of Late Uruk A glyptic at Susa' (2013: 306). In contrast to this, the glyptic imagery from the city of Uruk during both the Late Uruk and Jemdet Nasr periods is dominated by scenes more often characterised as 'sacred' or 'ritual' (confirmed through statistical analysis by Rova 1994; also Boehmer 1999; Pittman 2013). Therefore, while many studies illustrate the Late Uruk economy across the Near East with 'daily work' scenes excavated at Susa or Chogha Mish (e.g. Charvát 2002: 99, 'The Uruk Culture' fig. 5.2), the distribution of these scenes may suggest that the images reflect local economic practices in Susiana and cannot be extrapolated to represent a broader 'Late Uruk' world.

As shown in figure 3.1, the greatest variety of 'worker' scenes occur in the Middle and Late Uruk periods. These come primarily from Susa and Chogha Mish in Iran's Susiana plain, where administrators may have been intimately involved with regulating productive units through sealing practices. In addition to many other themes, all of the work scenes from figure 3.1, excepting threshing in a sledge, are attested at Susa between Acropole levels 18–17A (Susa II/ Late Uruk period).

[27] Dittman's method leads to strained explanations, for example the author suggests: 'A more unusual combination of sealings is Fig. 3: 2. Here a prisoner frieze (A.7) occurs together with a probable herding scene (B.4). One explanation could be that the unit which takes care of prisoners stood in relation to a special herding unit' (Dittman 1986b: 340).

Figure 3.2 shows some production scenes from Susa, and from the comparably strong tradition at Chogha Mish, also located in Susiana. While the community at Chogha Mish used sealing technologies including bullae similarly to Susa in the Late Uruk period, the site was (temporarily) abandoned before the introduction of writing.

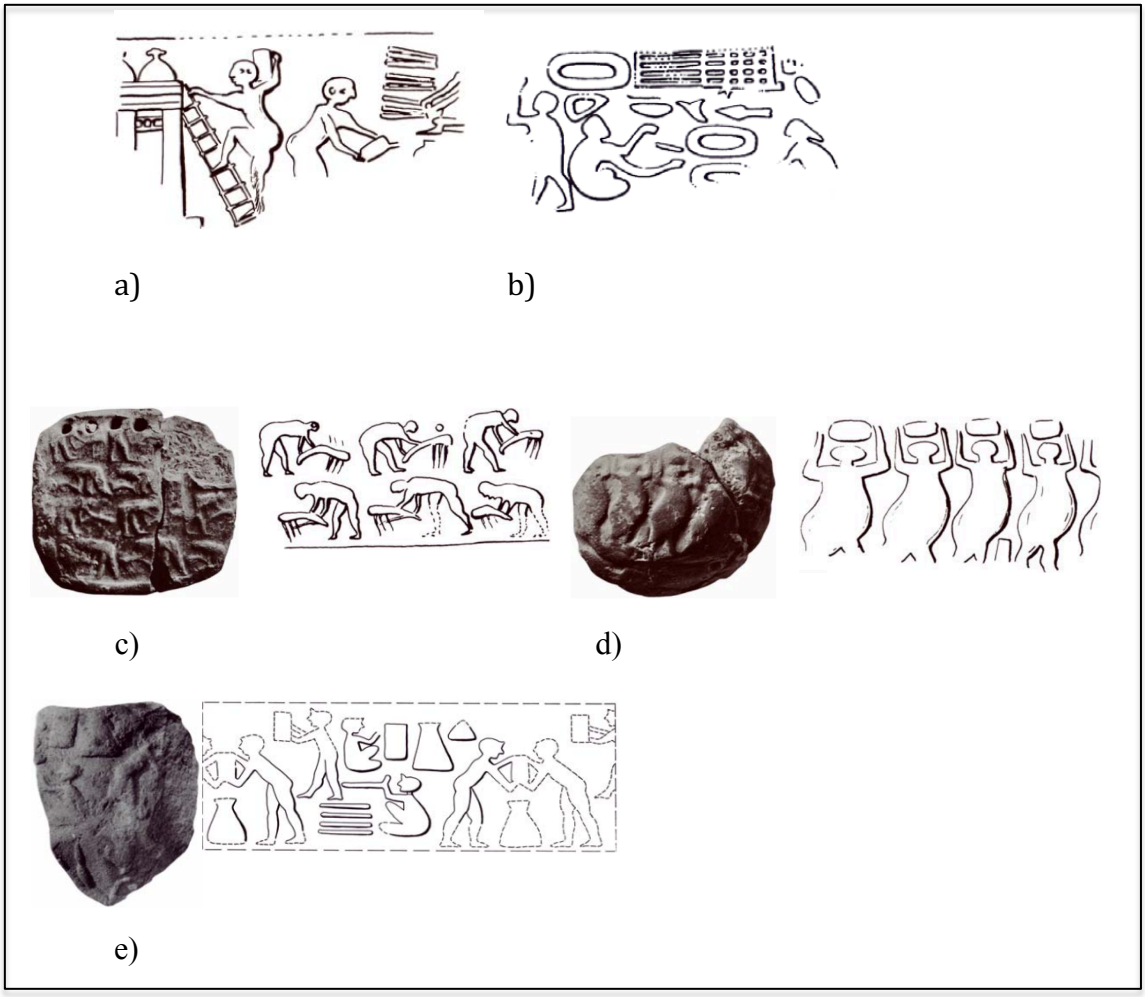


Figure 3.2: a) 'Granary' scene, Susa, clay sealing, Amiet 1972 no. 663 b) impression known from a bulla and a tablet, Susa CDAFI 8: 6.7 c) Amiet 1972 no. 621/ image after Roach 2008 d) sealed bulla, Susa, Amiet 1972 no. 678 /image after Roach 2008 e) Sealed bulla, Chogha Mish, Delougaz and Kantor 1996: Pl. 45 O 148B /image after Roach 2008

Grain and redistribution in Susiana?

Amiet 1972, n. 621 (fig. 3.2 c) is an impression on a numerical tablet, showing a group of workers bent over using agricultural implements. This is a rare, explicit

visual link between the origins of scribal culture and agricultural work gangs. Scenes with distinctive domed buildings in the Late Uruk Susiana seals have been interpreted as granaries; most of these scenes are from Susa (Rova 1994 Pl. 19, nos. 347–54) and a few from Chogha Mish (Delougaz and Kantor 1996, Pl. 131 B, impression on a sealing of a jar rim; Pl. 133 E impression on a bullae). These confirm the close relationship between the origins of scribal administration and grain redistribution which is also observed in the following period in the proto-Elamite texts, if capacity measures identified abundantly in the texts are correctly understood to represent amounts of grain. A very similar granary image to those from Susiana is also found at the 'Late Uruk' influenced site Hacınebi, on the upper Euphrates in south-eastern Turkey (Pittman 1999 fig. 3, no. 7, impression on a sealing of a jar rim). The repertoire of Hacınebi doesn't otherwise include naturalistic work scenes in the Susian style.

Collon (1987/2005: 15) noted the greater number of images of grain storage in Susa sealings (predominantly of Late Uruk/Susa III date) in contrast to the prominent images of cattle in Uruk seals (usually without associated human figures, and emerging from biers, as is never known from Susa). She suggests this may be representative of a more agrarian-based Susian economy and an Uruk economy with more prominent cattle-rearing. However, the amount of grain in distribution visible in the Uruk texts confirms that agricultural was also significant at Uruk, despite the lack of a strong glyptic tradition depicting its production and storage.

Schematic seals in Iran

While schematic seals are known at Susa from unstratified contexts (Pittman and Potts 2009: 112) and assigned Late Uruk dates, it is supposed that they ceased to be used at Susa during the proto-Elamite phases— and no other Iranian sites have produced schematic seals from proto-Elamite contexts. This situation contributes to the impression that the proto-Elamite tradition deliberately avoided depictions of humans, which may be paralleled by a similar avoidance of the human form in the proto-Elamite script (Dahl 2013: 246). As discussed below, schematic seals often depict textile or pottery production contexts, and their presence in Late Uruk Susiana (where they may in fact have originated) suggests that administrators, before the advent of writing, were using these seals to help organization their production and/or trade in those commodities.

Proto-Elamite glyptic

At Susa, Pittman (2013: 319) describes a transitional phase in naturalistically-rendered Susian 'Late Uruk B' glyptic (fig. 3.1), that represents the natural development from Late Uruk A towards the Proto-Elamite styles. Proto-Elamite glyptic includes a number of heraldic, ritual, presentation and other animal scenes. The number of 'production scenes' shrank, however in some cases animals are shown with tools as though they are humans at work. The proto-Elamite 'animals acting as humans' motif has precedents in Late Uruk period scenes, notably Amiet 1972 no. 680 from Susa, which shows animal and mythological(?) figures in a production-style scene, with two felines probably acting as scribes (Pittman 1993: 242). Roach (2008) catalogued 49 instances of Classic Proto-Elamite 'animals acting as humans'. Scenes

of scribal work are one of the most commonly attested, with as many as twenty-two examples identified by Pittman (1993). Figure 3.3 shows scenes from Late Uruk period Susa and some Proto-Elamite comparisons, that highlight the way that the tradition evolved.

At Tal-i Malyan, located in an intermontane valley of the Zagros around 600 km south east of Susa, the only known 'work' image published from the proto-Elamite period at this site[28] is a possible scribal scene in the classic proto-Elamite style with an animal acting as scribe (Sumner 2003: Fig 44 E), which was found impressed on two jar sealings. Seals and impressions from Tepe Yahya, a site another 600 km southest from Tal-i Malyan, do not depict any workers at the time of the proto-Elamite writing system (level IVC)[29]. Two Late Uruk period seals (Rova nos. 555 and 556) from Tepe Sialk (500 km northest of Susa, on the edge of the Iranian plateau) include workers, with no hair depicted, seated with vessels. In one case the vessel sits on a distinctive base that may represent a pottery wheel (Bréniquet 2016: 17). However, following the Late Uruk levels at Tepe Sialk, the proto-Elamite levels only produced seals with animals or geometric designs. Many proto-Elamite period seal impressions from Tepe Sofalin (near Tehran) await publication, and evidence from that apparently single-period site could substantially improve our understanding of proto-Elamite seals and sealing practices.

[28] Pittman (2003: 107–9) includes only partial publication of seals from Tal-i Malyan area ABC; for example, she refers to 'twenty-four individual images, of which eight can be fully reconstructed' from Building Level 3 and stratum 9 alone.

[29] Instead, there are of the 'glazed steatite' type, and a few Classic Proto-Elamite impressions of animals in heraldic poses (Mutin 2013: 437–8).

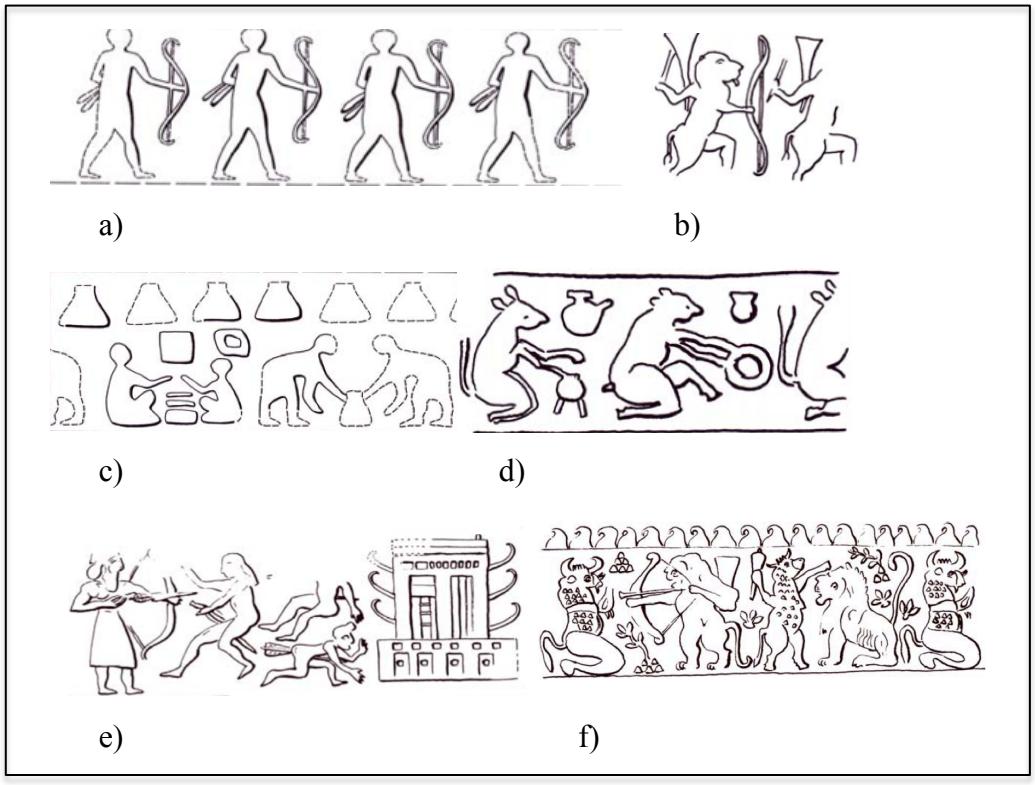


Figure 3.3: a) impression on bullae, Chogha Mish, Delougaz and Kantor 1996: Pl. 33H, 150A b) impression on tablet, Susa Acropole 15A, Amiet 1980: no. 1685 c) impression known from multiple bullae, Chogha Mish, Delougaz & Kantor 1996: pl. 35A–B, G–L, 148D. d) impression on tablet, Susa Acropole 15A Amiet 1980: no. 1684 e) impression on clay sealing, Susa MDP 43: 695 f) cylinder seal, Susa, Amiet 1980: no. 1014

The inter-regional motifs: storage and movement of goods

While explicit production scenes are particularly associated with Susiana, other themes and styles, appearing across a number of sites in the Near East, may reflect loosely shared cultural traditions that sometimes obliquely suggest a concern with production, storage, or movement of goods (Pittman 2001). These 'interregional motifs' (Dittman 1986b) include diverse themes such as heraldic and mythological animals, but also human figures in procession, and jars in a rope netting, sometimes with a distinctive element usually interpreted as fringed cloth emerging from them[30].

[30] These have been found at Uruk, Susa, Tell Brak, Hacınebi, Habuba Kabira, and Godin Tepe. See Boehmer 1999: 29 ff. for discussion of the 'fringed cloth'.

Pittman expanded the theme to include 'virtually all of the images found in Eanna V–IVb' (2013: 308)[31]. One interregional 'production-related' theme is that of a particular, distinctive vessel-form with looped handles, perhaps sitting in a net (fig. 3.4). This vessel form is also seen in production scenes from Susiana. Seals from different sites and periods also represent a similar jar hung with a rope on a pole extending between two figures (human or animal). Such 'transport scenes' are known from Middle Uruk impressions at various sites, and outlast many other 'work' themes, with an example continuing into Early Dynastic II Fara (Pittman 2007: 320). With the possible exception of these individuals carrying jars, the interregional motifs do not focus on workers or production in the way that the tradition limited to Susiana does.

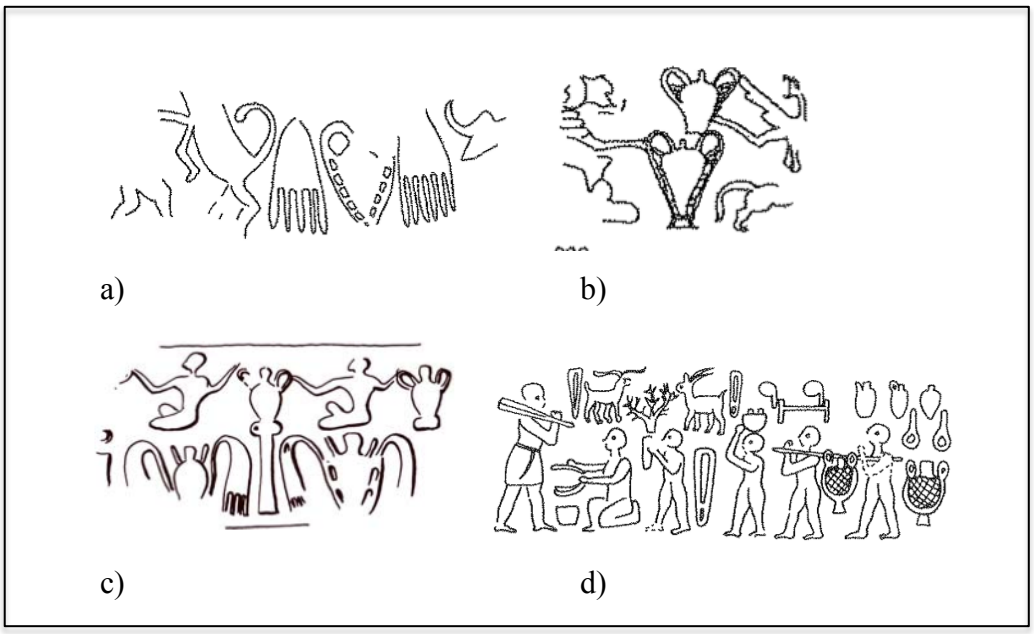


Figure 3.4: a) clay sealing for a jar, Uruk Eanna IV, ATU 5 pl. 31a-c. b) clay sealing, Ur, Legrain 1936: no. 330 c) clay sealing, Susa Acropole 17, MDP 43: 651 d) clay sealing for a jar(?), Uruk, Eanna III(?), Amiet 1980, no. 1609.

[31] This has the implication that a portrayal of 'Late Uruk' glyptic as originating at Uruk—and representing part of a particularly *Urukean* influence at other sites during the 'Uruk expansion'—may need to be re-assessed.

Schematic seals

The interregional motifs mentioned above are distinct from another widely-spread glyptic tradition, the so-called 'schematic' seals[32]. Schematic seals often depict figures interpreted as workers engaged in production, but are carved in a significantly different style from both the Uruk-related and Susiana-specific seals discussed above:

'Schematic' refers to style produced by drilling to represent segments of the body and head of figures (emerging from the Middle Uruk 'baggy' tradition known at Tell Brak in Syria and Susa [Pittman and Potts 2009]), whereas contemporaneous traditions are called 'naturalistic' or 'modelled' in contrast. The types of tasks identified in schematic seals are more limited than the various naturalistically-carved traditions, and a great majority of the seals include figures with a characteristic 'pigtail', discussed further below. Schematic seals date primarily to the Late Uruk period—for example, they are limited to the Late Uruk levels at Nippur, as well as possibly pre-proto-Elamite contexts at Susa; however, at Uruk a few are found in Uruk III (=Jemdet Nasr period) contexts.

For the late fourth through early third millennia BC it is far more common to find impressions of seals on clay than it is to find original seals. However, this situation is completely reversed with the schematic seals which are known almost entirely as original seals, a difference that has been difficult to interpret. Through their wider distribution than proto-cuneiform writing—and apparently negligible use to seal

[32] Although an intriguing link is provided by a seal impression from Tell Brak, found in a context with Uruk-related ceramics. The seal shows vessels with fringe emerging, as in the interregional style, alongside squatting figures with a single long lock of hair reminiscent of the schematic 'pigtailed' figures (Oates and Oates 1997: fig. 14 /Pittman 2001: 439 fig. 11.28e).

tablets at sites that did have writing—it might be suggested that these seals represent a sector of administration less closely associated with scribal traditions than some other types of seals. Approximately 120 schematic seals with figures have been excavated at sites widely spread across the ancient Near East, and about the same number more are known from private collections (Asher-Greve 2008:124–5). The greatest number of such seals is unsurprisingly from Susa, with forty published schematic seals, thirty-eight of these with figures bearing the signature 'pigtail' discussed below. On the other hand, excavations of the 'proto-literate period' at the other major Late Uruk period city in Susiana, Chogha Mish[33], did not produce any of these schematic seals, although a number of impressions of naturalistically-rendered groups of working figures with similar 'pigtails' appear (Pittman and Potts 2009). These naturalistic figures from Chogha Mish have parallels in Susa and perhaps Uruk, although they are fewer in number and less widespread than the schematic pigtailed figures.

Figure 3.5 shows the sites at which such seals have been found in small numbers. A large portion of the seals known from Tello at this time are schematic and show pigtailed figures, with 14 published examples (Rova 1994 pl. 48–49). At Uruk, no schematic seals have been excavated securely dating to before Eanna III, though a few are known from uncertain contexts[34] and two from Eanna III contexts. One of these, Rova no. 588[35] shows pigtailed figures seated on mats with vessels. These few examples may indicate that schematic seals and the 'working' context they depict were part of a broader regional production tradition with probably only marginal

[33] The chronological relationship between Chogha Mish and other sites in the near east is not understood with precision (Potts 2012: 521).
[34] Rova lists five schematic seals of uncertain context from Uruk: nos. 773–5 and 783–4, three of which show seated pigtailed figures (773, 783–4).
[35] Amiet 1980 no. 215. The other shows vessels but no figures.

representation at Uruk in Eanna V–III periods—or at least at the Eanna and Anu areas excavated at Uruk.

Figure 3.5: Distribution of schematic seals with 'pigtailed' figures. Uruk; Jemdet Nasr; Nippur; Susa; Chogha Mish; Tello; Çatalhöyük (Amuq); Jebel Aruda; Habuba Kabira; Tell Afis; Tell Agrab; Unknown site- Abu Dhabi; Birecik; Tell Brak; Fara; Ur; Tell Asmar. Sites according to the catalogue of Asher-Greve (1985), with additions from Pittman and Potts (2009).

Seals and production imagery at Uruk (Eanna V–III) and Uruk-related sites

At Uruk, seals are most frequently known through impressions on clay sealings, and less often through impressions on tablets (mostly Uruk IV tablets); few original seals have been found. Both schematic and naturalistic production scenes at Uruk in the late Uruk period are rare. From Eanna Uruk IV there are two possible plowing, farming or agricultural scenes (Rova no. 674 on tablet W 19417, a; Rova no. 765),

and a possible scene of workers with pots, including however an 'antlered' figure (Rova no. 713)[36]. Another seal, Rova no. 663 contains no figures but might show paraphernalia associated with textile production, if the objects resembling 'eye-idols' or 'hut symbols' (Delougaz and Kantor 1996: 113) are in fact used in spinning (Bréniquet 1996). An 'armory' scene with 'troops' was impressed on an Uruk IV tablet[37], that perhaps finds parallel in the Late Uruk and proto-Elamite scenes of bowmen from Chogha Mish and Susa respectively.

A few threshing scenes are known from the Late Uruk period, and may be more closely related to ritual than the 'daily work' scenes known from Susiana. They are identified only at Arslantepe and through objects of unknown provenance. The scenes appear to depict a ceremony involving a seated high-status individual what has been described as a 'ceremonial threshing sledge'. This may further highlight the role of community-binding ritual in agricultural production and redistribution. A cylinder seal impression with such a scene is known from Period VI A (c. 3350–3000) at Arslantepe (Sürenhagen 1985; Steinkeller, Littauer and Crouwel 1990; seal S. 1 Frangipane 2007: 294) that shows one seated and three standing individuals, the sledge being pulled by an animal. The individual standing furthest behind the sledge is half-sized, which might suggest it is a child. Frangipane (2010: 294 n 7) identifies the sledge as a *tribulum* and compares it to an object excavated in the elite building area of Arslantepe. This is one of only a few cylinder seal impressions with human figures from Arslantepe which can be understood to represent Southern Mesopotamian influence (Pittman 2007: 319). Close comparison with the Arslantepe

[36] Fragment of a jar sealing, impression 713
[37] Brandes 1980 fig. 6

seal has been made with an unprovenanced plaque (BM 12885; Sürenhagen 1985 : 231 fig. 2) showing a figure with the distinctive cap and beard of the Late Uruk southern Mesopotamian 'priest king', also seated in a canopied sledge drawn by a bovine and attended by a standing figure. Another unprovenanced object is a cylinder seal with similar imagery (Pittman 2007: 318 fig. III.63; Frangipane 1997: 67: fig. 16, 2), in this case both the standing and seated figure are rendered with hairstyles similar to the 'pigtailed figures' known in other work scenes, and are interpreted by Pittman (2007: 318 fig. III.63, 3) as women.

In a somewhat different scene from Uruk, a seal impression with a man standing on a sledge pulled by a bovine with other human figures attending appears on the edge of proto-cuneiform tablet W 19417, a; unfortunately, only the edge of this tablet has survived, and no text is preserved on it. This scene may not be closely related to the 'ceremonial' scenes, as the main figure is standing rather than seated under a canopied structure. While of later date, the sledge reconstructed from the tomb of Pū'abum (RT 800) at Ur (Woolley 1934: 78–80, pl. 122–3) appears similar to that depicted on the proto-cuneiform tablet. The possibility that these instruments may be related to the proto-cuneiform sign-form GURUŠ is discussed below.

The only Uruk III period[38] 'work' scene excavated at Uruk (Rova no. 643) is a baggy-style 'herding' scene with animals and a figure seated appearing on a serpentine seal; the figure has one knee up, as is common in many schematic seals with workers also, and a club or staff in one hand. From the Anu area the twenty-one seal impressions

[38] After Rova's catalogue including 41 seals from Eanna III levels: nos. 557, 569, 586, 588, 597–9, 601–11, 628–29, 643–44, 658, 662?, 664?, 678, 684, 686–94, 703–11(?), 716, 737, 749, 760(?), 769(?).

excavated show no production or worker scenes[39].

A number of seals from Uruk IV and Uruk III contexts[40] show figures carrying and presenting products, sometimes to another figure outside a building that is usually interpreted as a temple based on the façade.[41] These scenes show tributary or redistributive behavior, rather than focusing on production itself. In summary, seal scenes at Uruk at the time of the fluorescence of proto-cuneiform writing, with rare exception, do not depict the workforce involved in producing the goods recorded in texts. They do, however, suggest an interest in controlling the movement of certain goods[42].

Unlike at Uruk, the majority of published seal images from Jemdet Nasr are known from impressions on tablets (thirty-four in total) and original seals, rather than impressions on jar or door sealings[43] (see Rova nos. 822–68). Four schematic seals with pigtailed figures are known; two of the scenes depict the figures associated with pots, one perhaps with spinning, and one is difficult to interpret. Many of the naturalistic seal impressions on the Jemdet Nasr tablets have been difficult to reconstruct (see Matthews 1993). However, in a few cases, they appear to be of either production or transport/storage of goods. For example, Rova no. 840[44] shows figures

[39] Rova 562, 613–26, 738. However, no. 619 shows a fanciful human-like figure with the flowing 'fringed cloth' known from the interregional style in this case forming the figure's legs, as it poses next to an object with handles and cloth emerging; this seal might suggest an association with textile production.

[40] Uruk IV: e.g. Rova no. 570; Uruk III: e.g. Rova nos. 628, 689, and 749

[41] Clothing is not depicted on these figures; they are most accurately described as 'sexless' since neither male or female sex markers are indicated, even if male 'gender' may be supposed by the bald head, body shape and comparison to figures on the Uruk vase. See discussion below section III.

[42] Scenes of presentation of goods are known also from the Uruk Vase, and from a fragmentary relief (Becker 1993: pl. 39)

[43] From the excavations in the 1920's only a single clay sealing with cylinder seal impressions was recorded (Matthews 2002: 17).

[44] Amiet 1980 no. 1627, impressed on a tablet, see also Buchanon 1966: n 7.

stacking objects, in the presence of animals. From the limited evidence, the tradition of representing work at Jemdet Nasr may therefore differ from that at Uruk.

The case of the pigtailed figures

Discussions of gender in the Late Uruk/Jemdet Nasr period workforce have drawn on the widely-distributed schematic seals, which frequently depict figures with what has been described as a 'pigtail' (Porada 1947). Despite the methodological difficulties in identifying the gender of such figures (see below), these seals have been linked to changes in 'gender regimes' (Asher-Greve 2008) which are posited to have occurred in late pre-history with the growth of urbanism. These changes have been associated with developments in information technologies (ie sealing and writing) and the growth of a wool economy and 'semi-industrial' textile production, predominantly by the hands of female workers (Zagarell 1986; McCorriston 1997; 55 2008: 82). The schematic seals, with their emphasis on weaving and apparent depictions of groups of female workers, have been used to illustrate these changes. Asher-Greve (1985: 130) explicitly compares two seals (fig. 3.6) with 'geme$_2$-dumu' work groups from cuneiform texts of the mid–late third millennium BC. This suggests that similar types of production contexts as observed in later cuneiform texts may have their origins in the proto-literate period—and implying that proto-cuneiform and proto-Elamite texts might be shown to


a)


b)

Figure 3.6: Schematic 'pigtailed' figures. Asher-Greve (1985) interpreted them as depicting groups of working women comparable to female weavers in later cuneiform geme$_2$-dumu texts a) serpentine seal, Susa, Amiet 1972 no. 739 b) steatite seal, Susa, Amiet 1972 no. 740

record similar work groups. On the other hand, based upon sealing practices and location of recovery, the schematic seals themselves are less closely associated with those writing systems and may not reflect a labour organization tradition practiced by proto-literate scribes. However, this picture could change substantially with better-stratified seal finds or the discovery of future archives.

Activities depicted

While pigtailed figures may appear in different poses and contexts, there are some general tendencies. Figures often appear in groups that suggest communal work is taking place. Most of the figures are seated, usually on what look like mats or low platforms. Frequently there are vessels in the hands of the figures or nearby. Figures may in some cases be involved in making pots, or are perhaps associated with the products within the vessels. Many of these figures are involved in textile production, as are the 'pigtailed' figures in naturalistic impressions primarily from Susiana. Another theme is that of the 'procession' of standing pigtailed figures with staff-like objects in their hands (Rova no. 830); Bréniquet (2016: 19) has recently interpreted these as individuals engaged in 'spinning with a short distaff and suspended spindle'. Similar objects held by seated, pigtailed figures, with a spider also in scene, may support this identification (from Susa, Rova no. 430). The spider appears in a number of schematic seals, and has been read as symbolically connected to weaving work (Collon 1987/2005: 16). Porada (1947 : 4, and pl.III, 7e) associates a very unusual seal in private collection with dairying, and other images of figures with two-handled pots might represent churning (Bréniquet 2016: 18).

The pigtail —a woman's hairstyle?

Pigtailed figures (both schematic and naturalistic) appear in scenes of textile production, handling vessels (potting?), and churning—all which have strong cross-cultural association with women (Bréniquet 2016). The identification of the gender of figures on schematic seals is based upon a cumulative set of evidence, including the tasks undertaken by the figures, the fact that they often appear 'clothed'' or with legs not showing (with exceptions, see below), and comparison of the 'pigtail' hairstyle with the hairstyle of (a few) more recognisably female anthropomorphic stamp seals and statuettes (Asher-Greve 1985). Yet the schematic rendering of the figures means that it remains difficult to confirm their gender.

Because the style means that detail is difficult to depict on the seals, the inclusion of the 'pigtail' seems to be a significant cultural feature. Hairstyles often play important roles in group identities and class construction. Potts (2011) associated the distinctive slave-lock known from second millennium Akkadian texts, called the *abbuttum*, with the hairstyle depicted on a scene of prisoners of war of the Akkadian period (mid-third millennium) found in the area of Nasiriya (Moortgat 1969, Pl. 136). Wu (1998) alternately suggests that from at least the Akkadian period, 'a ponytail was the hairstyle of the common Elamite [or lulubu] man'. These examples from later periods emphasize the significance of hairstyles as markers of group identity. They probably do not tell us what the significance of a single long lock was to the seal-carvers and administrators who were present across the near east in the late fourth and early third millennia. Asher-Greve concluded that while the majority of these pigtailed figures are women, some of them are men; difficult as such conclusions may be, if this is

correct then the hairstyle could be (primarily) indicative of a particular social group rather than acting as a generic gender identifier.

Comparison of the pigtail as a hairstyle on schematic figures with hairstyles on other media (including the naturalistic style images on seals) is difficult. The most certain comparisons may be from Susiana. In particular, an impression on a sealing, Rova no. 365 from Susa shows figures in tunics with long hair, some seated on mats similar to the schematic scenes, baskets or other objects, and a loom. This and other naturalistic scenes from Susa (e.g. Rova no. 367, on a tablet fragment) provide strong connection between the schematic pigtailed figures and textile production—yet at the same time another image of work at a loom on a tablet from Susa (Amiet 1972: 673) shows figures that are clearly bald or capped.

A few naturalistic depictions from Uruk also show figures with a single long lock of hair who are associated with ritual or religious imagery, including holding an object usually interpreted as a standard of Inana, perhaps the same standard which the cuneiform sign $MUŠ_3$ was modelled (Rova no. 701, Eanna IV jar sealing impression; Rova no. 607, Eanna III seal). A single long lock of hair is also characteristic of a figure known from a few depictions accompanying the 'priest-king' figure, in which cases it is interpreted as a male apprentice or heir to the priest-king. The difference in carving techniques between schematic and naturalistic seals makes it difficult to tell if the two hairstyles are comparable, but the 'apprentice' may (like some of the anthropomorphic stamp seals) have a loose shoulder-length hairstyle differing from the tight, extended lock of the 'pigtailed' figures. A quite different association with a similar 'pigtail' hairstyle also occurs at Habuba Kabira, in a prisoner scene of Uruk

style showing a figure with a chignon grasping a seated, bound prisoner by the ponytail, an upraised weapon (reconstructed) in the other (fig. 3.7e). This scene may in fact be more closely related to the pigtail on the schematic seals, particularly if the pigtailed figures represent groups of workers similar to those known in mid–late third millennium texts, some of whom originated as prisoners. Alternately, some support for interpreting a single long lock of hair as an elite woman's hairstyle may come from noting stylistic similarities with some (sometimes erotic) 'mythological' and 'banqueting' scenes carved on seals from Early Dynastic Ur (Amiet 1980 pl. 62–3, esp. no. 845 and 837).

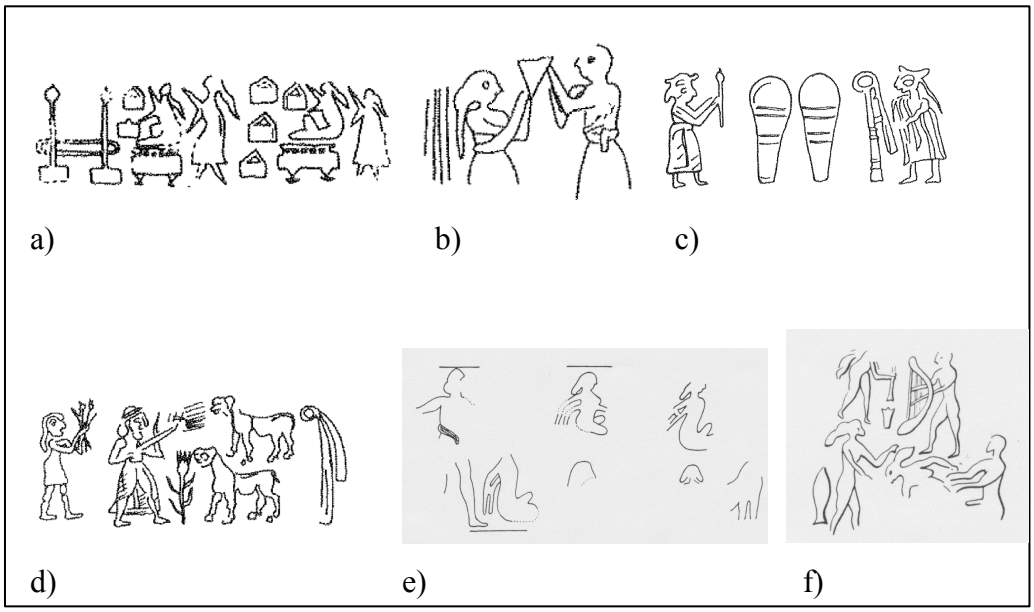


Figure 3.7: Seal images including longer hairstyles. a) sealing, Susa, Rova 1994 no. 365 b) clay sealing for a jar(?), Uruk Eanna IV, Rova 1994 no. 701 c) alabaster seal, Uruk Eanna III, Amiet 1980 no. 651 d) lapis lazuli seal, Uruk Eanna III 'apprentice of the priest-king' Rova 1994 no. 603 e) prisoner scene, Habuba Kabira (Boehmer 1999: 141, fig. 122h) f) Amiet 1980 pl. 62 no. 845 and 837

Men, women, and work in seals

Asher-Greve, who developed schema for distinguishing male and female figures in the schematic seals, understood about 15–20% of those seals to include male workers. In her schema, men were depicted in a greater variety of poses, and included all of the 'bald' (hair not depicted) and capped figures, as well as some of the pigtailed figures

(2008: 156 fig. 4.1), which she primarily identifies as male based upon the appeared of legs or the figure's position in the scene. On the other hand, Bréniquet draws on Rova's catalogue of all published and provenanced Late Uruk seals with images of workers, to note that 43% of figures from her sample (of both naturalistic and schematic style) may be identified as women, 40% as men, and 17% as un-gendered or gender not determinable (Bréniquet 2016: 16, fig. 2)[45]. Taken at face value these data suggest that schematic seals show more women at work, and naturalistic seals more men. This has also been noted by Collon (1987/2005) who suggested that naturalistic seals represent 'male temple institutions' and schematic seals 'female temple institutions' due to this disparity. However, possible methodological differences in gender determination between various authors (for example, it is unclear if Bréniquet shares Asher-Greve's 2008 criteria for identifying some males with pigtails), mean these data cannot be meaningful compared with any precision.

Drawing from scenes of both schematic and naturalistic seals, current interpretations of the gender of figures suggest gender differences in division of labour. Women in seals may be engaged in textile production (spinning and weaving), work with animals (herding?), churning, picking fruit (or airing wool?), 'handling' pottery, and cultic tasks; for men activities are, quoting Asher-Greve (2008:137) 'more diverse and include exclusively 'masculine' tasks cross-culturally associated primarily with males, such as warfare and related acts, combating wild animals, construction work, lifting and carrying large and heavy items, fishing, hunting, and most work involving

[45] For the Late Uruk period, Rova (1994) identified 100 unique seal scenes whose content could be categorised as 'artisan or worker', as well as 72 of a separate category 'female artisan or worker' – although some inconsistencies in the selection of scenes (for example, some may be of Jemdet Nasr rather than Late Uruk date), as well as the ambiguity in the process of interpreting and categorising scenes (especially with regards to gender), means this data should be used carefully (Suter 2014).

animals'. Yet the usefulness of seal images for identifying gender and labour practice is limited. Bréniquet admits that the identification of men in seal images is usually 'based on the actions they perform: fishing in the marshes, tending herds in the steppe, gardening with tools, filling storerooms, and manipulating weapons'. If the gender of a figure is determined in this way, then a clear case of circular argumentation would result from using seal images as evidence for men's versus women's work.

Mountain images, regional identity, and male workers

Explicit connections between images on seals and signs in the writing system are rare. Some parallels have been drawn between seal images and texts for both the proto-cuneiform and proto-Elamite traditions, but these have not generally aided in the decipherment of signs[46]. However, one example may prove useful to the discussion of human category signs in this dissertation—a stylised 'mountain' motif that emerged in late fourth millennium glyptic traditions of both Mesopotamia and Iran. With the development of writing, both scripts used what appear to be sets of signs related to this motif — either based upon three 'circles' (proto-cuneiform KUR_a) or six circles (proto-cuneiform LAM and proto-Elamite M383 and M384 with variations).

The meanings of these signs are explored in chapter 6b. The uses of both LAM (in its various forms) and KUR_a in proto-cuneiform confirm its semantic link with products

[46] E.g. Ross 2014. Pittman (1994) identified a number of designs from the glazed-steatite glyptic style with signs in the proto-Elamite script, although the meanings of these signs remain unknown. Ross (2014: 314) suggests that proto-cuneiform lexical lists in particular represent scribal efforts to transform images that were previously found as motifs in seals into signs in the writing system: 'lexical lists were a product of scribes' attempts to sort through the corpus of glyptic motifs and develop (some of) them into a viable collection of signs', and proposes that scribes were 'perhaps former seal-carvers' at their outset.

(LAM/KUR$_a$) or animals (KUR$_a$) from mountainous regions: lapis lazuli, wood and/or nuts (almonds, pistachios), wine (?), as well as mountain breeds of equids and sheep that are attested by similar designations in later cuneiform. At the same time, KUR$_a$ appears to represent male humans in some types of accounts.

The pattern of development of the mountain motif in the glyptic may help to unravel the complex textual data. Mountain images do not appear in the stratified glyptic of Susa from levels 18–17b Acropolis, but they are known in a few cases from impressions on Uruk IV numerical tablets from Uruk of approximately the same date (fig. 3.8)[47]. Following this, the motif appears occasionally in Jemdet Nasr period glyptic from Mesopotamia, but develops especially prominently in the 'Classic proto-Elamite' glyptic (fig. 3.8b–e). In parallel, the proto-Elamite texts included upwards of twenty-five signs including a modified 'mountain' form (Dahl *working signlist*). The signs in the series M383 and M384 are not deciphered, but by contextual clues are understood to belong to the group of 'household' signs. It may be proposed that the proto-Elamite network included interaction with a variety of households that modelled their identity in heraldic form on modifications of the 'mountain' form—a hypothesis that fits the geographic context of the proto-Elamite phenomenon well. The area around Tal-e Malyan in the Kur river basin may have experienced heavy logging of its almond, pistachio and juniper forests at the beginning of the third millennium (Miller 1985), suggesting a possible industry in the area for longer-distance trade, that could be reflected in the Mesopotamian proto-cuneiform references to these products with variants of the LAM$_{a-b}$ and KUR$_{a-g}$ signs. So far,

[47] Four fragmentary tablets (W 6883,h ; W 6881,h2 ; W 6881,g ; W 6883, e+t1 (Englund 1994 pl. 129, Seal no. 4) bear impressions of a seal that shows a 'mountain' rendered with circular impressions, on top of which two bovines sit. Three of these are rolled with a second cylinder seal, typical of the 'interregional style' Late Uruk seal, depicting serpopards with intertwined necks. Each of these tablets preserved one or two numerical notations, and one contains the single ideographic sign ŠU$_2$ (ZATU 534) which may be a textile designation.

proto-Elamite texts are noteworthy for having produced no evidence of administering long-distance trade in precious materials (Dahl 2013). The graphical equivalent 'owner' signs M381–M383 in Proto-Elamite are of uncertain meaning, but the Proto-Elamite texts have so far been noted to represent the local-level economies and provide no clear evidence that they record inter-regional trade in valuable commodities (Dahl 2015: 45).

Unlike proto-cuneiform, Proto-Elamite seems not to have used these mountain-shaped signs to represent 'male workers'; instead they used M388 which, by its graphical orientation 'upside down' does not appear to be semantically related to the 'mountain' motif. R. K. Englund's suggestion that the sign may depict male genitalia in contrast to the sign M72 is one possible explanation of its origin. In contrast, in the proto-cuneiform world, the meanings 'mountain' and 'male workers' were sometimes conveyed by one and the same sign (KUR_a), suggesting either the humans recorded were associated with the mountains—an idea with a long history in Assyriology (chapter 6a), or that scribal logic found some other semantic, rebus, or visual link between the commonly used 'mountain' sign and its less commonly attested uses to indicate male humans, or 'workers'.

In short, while the earliest attestations of the 'mountain' motif in glyptic are known from Uruk, the theme was developed strongly in the proto-Elamite world. In the following Early Dynastic periods, it continued to appear in Iranian and Mesopotamian contexts, and could be a part of the 'Iranian' influenced traditions known in Mesopotamia, such as the animals-acting-as-humans on one of the bull-headed lyres from the royal graves at Ur (Hansen 2003: 106).

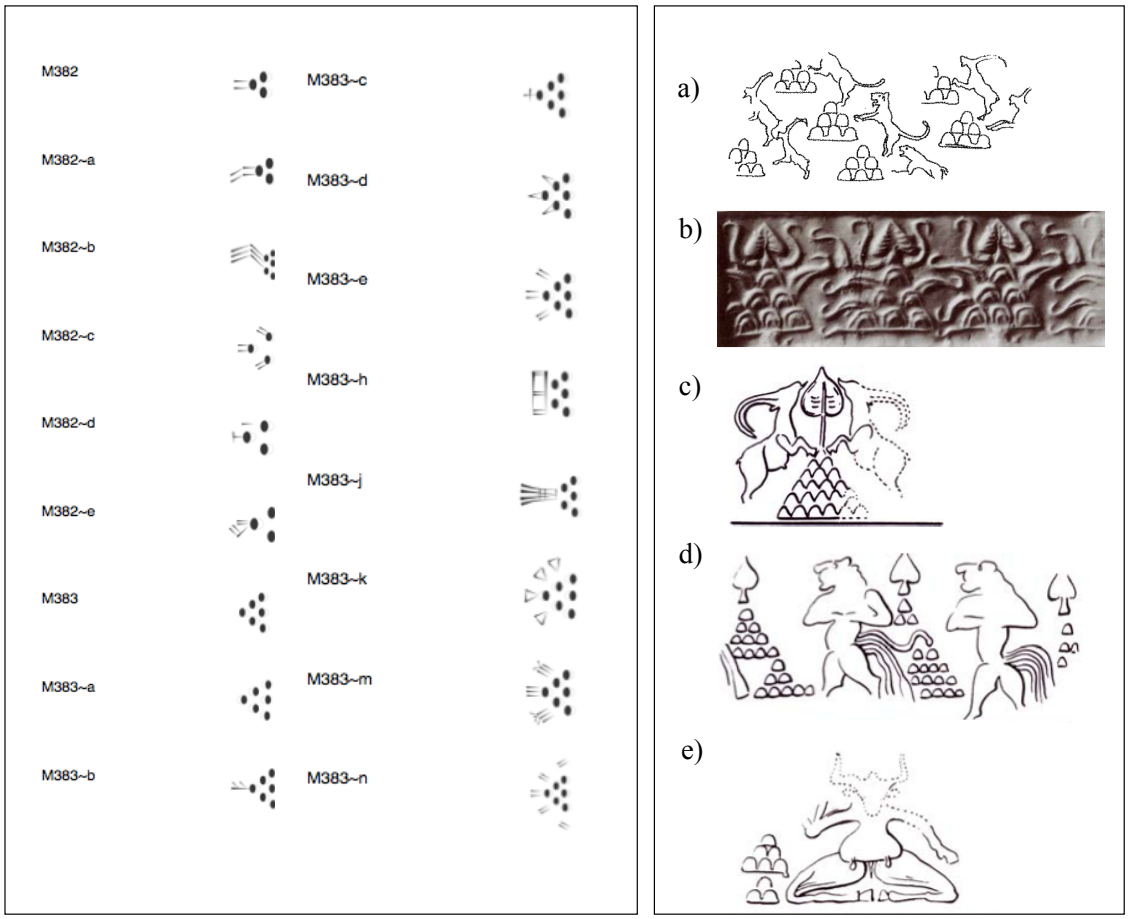


Figure 3.8 Proto-Elamite 'mountain' seal motifs and signs in the writing system compared. Left: Some of the signs in this group (after J. L. Dahl's working sign-list available at [http://cdli.ox.ac.uk/wiki/doku.php?id=proto-elamite)](http://cdli.ox.ac.uk/wiki/doku.php?id=proto-elamite) probably represent 'households'. The signs are turned 90 degrees counter-clockwise to their visual referent, following publication convention. Right: a) sealed tablet, Uruk IV, Boehmer 2005 pl. 95 no. 11 b) black marble seal, Susa, Roach 2008 no. 1022 c) clay sealing, Susa Roach 2008 no. 833 d) Sealed tablet, Susa Roach 2008 no. 1040 e) sealed tablet fragment, Susa, Roach 2008 no. 1032

Summary

In Susiana the involvement of seal-bearing administrators in overseeing the production of goods, including pots, comestibles, and textiles, is more explicit than at Uruk during the Late 4th and early 3rd millennia (Pittman 2013: 319). This is most pronounced in Susa during the period preceding the invention of proto-Elamite writing, but some iconographic continuities suggest that scribal administrators were

concerned with some similar types of production as the former seal-bearing Susa II (Late Uruk period) administrators.

The most widespread and common scenes of production known from Late Uruk and Jemdet Nasr period seals are the schematic seals, which are however less closely associated with scribal activity. The schematic seals are strongly correlated with textile production in particular, and a particular social group (if not simply gender) may be indicated by the frequently depicted 'pigtails'. The wide distribution of these seals might indicate that they follow an interregional textile trade, although they may also be associated with other tasks, including production of dairy products (churning).

At Uruk the focus of imagery (in the 'naturalist' seals) is on presentation or distribution of goods, rather than their production. This may reflect a more distanced role played by Uruk's seal-bearing and scribal administrators in the production of certain goods, or it may simply reflect a community that expressed its role in society in imagery differently than its Iranian neighbours.

Chapter 4: The writing systems

Introduction: early writing systems

To some grammatologists, true writing represents spoken language (Robertson 2004: 20), while to others maintain that semasiographic[48] systems ought to be included under the label of 'writing' (Trigger 2004: 39). Gelb, who coined the term grammatology (the study of writing systems), maintained this broader definition of writing as 'a system of human intercommunication by means of conventional visible marks' (1963: 12). Gelb's definition of writing is used in this dissertation.

Proto-cuneiform is usually treated as one of a few 'pristine' developments of writing in the world, while proto-Elamite is a 'borrowing' of the idea of writing—however chronological issues and the spread of precursors to writing may suggest that both regions were undergoing the process of the invention of linguistically-oriented writing roughly simultaneously and along somewhat different trajectories. Writing systems invented in pristine conditions (i.e. in a community with no previous knowledge of the idea of writing) underwent longer and differently-natured processes of formation than writing systems invented following contact with a 'fully-fledged' writing system (de Voogt and Quack 2012: 1).

[48] Conveying meaning through signs in a manner that language, in the form of specific phonetic information, is not directly implicated.

Proto-cuneiform writing

Writing and text structure

Proto-cuneiform writing was first and foremost a book-keeping system that conveyed information through signs and sign combinations, as well as through the tablet format and sometimes sealing practices. There are opposing views on the extent to which Sumerian language can be identified in proto-cuneiform (Steinkeller 1995; Englund 1998, 2009; Rubio 1999, 2005; Glassner 2003; Wilcke 2005; Krebernik 2013; Monaco 2014a; Nissen 2016), and only a few instances of possible Sumerian lexeme-based homophony have been identified.

Few or no personal names in the proto-cuneiform corpus has yet been unequivocally shown to reflect Sumerian (Englund 2009; Krebernik 2013). Krebernik (2013: 188) outlines three possibilities for this circumstance: 1) this may not reflect the absence of a Sumerian linguistic context so much as a system in which individuals were represented with groups of signs with a weaker connection to language, that is, through 'heraldic or 'coat of arms' –type designations 2) the names are not Sumerian, or 3) the names are Sumerian but were of a type that fell out of use before better-understood Sumerian texts emerged. The evidence therefore remains inconclusive, but supports the idea that both Sumerian and Akkadian languages were to some extent familiar to the proto-cuneiform scribes, or possibly other unknown languages.

Signs in proto-cuneiform texts were not inscribed in a linear format, but in a series of cases and sometimes sub-cases, separated by lines. These cases could be of different shapes, and could be arranged in different ways on the tablet surface. Successful interpretation of proto-cuneiform texts involves attention to the system of cases and

sub-cases in which proto-cuneiform signs were organized, and to the numerical notations that sometimes help to explain the relationship between different sets of information in the cases. Given the nature of the texts and our uncertainty about the language presented, approaches based on text-format and numerical information are necessary to complement the otherwise often unprovable 'Sumerian' readings of texts when relying upon later sign equivalencies alone (e.g. Charvát 1998; Glasser 2003 esp. 134 ff., but see review by Englund 2005). A basic division in text formats was established by Green (1981) and in greater detail by Englund (1998: 58–59) who established six main formats from simplest (1) to most complex (6). The use of sub-cases and colophons may also reflect the 'grammar' of the account content, with sub-cases reflecting adjectival relationships to the 'direct object' in a main case, and colophons providing 'adverbial' complements (Englund 1998: 63). The presentation of signs within a case in proto-cuneiform is not 'linear', and therefore the transliterations of texts provided in publications (and adopted this dissertation) employ a strictly conventional ordering of signs; the orderings are based upon some guesses drawn from spatial arrangement of signs, and sometimes from later cuneiform designations.

Signary

The proto-cuneiform texts can be considered only partially deciphered. While 619 proto-cuneiform signs have been equated with later cuneiform ones and are assigned Sumerian sign-names (Green and Nissen 1987), the phonetic and/or even semantic values of many of these signs in the proto-cuneiform texts are not known. In addition, Green and Nissen (1987) identified a further 151 signs (ZATU 620–771) with have

not been successfully related to later cuneiform signs[49]. Englund (1998: 67) critiques Green's grouping of graphically similar signs that have not been proven by context to have the same meaning—he therefore created a system of sub-cases (beginning with Englund 1994) that indicate (until further proof of sign equivalencies is likely to reduce the number again) that there may be as many as 1900 unique signs in proto-cuneiform— in comparison to Green and Nissen's 770 signs. Green and Nissen assigned Sumerian names to the proto-cuneiform signs (referred to by their ZATU number*, Zeichenlist der archaischen Keilschriftzeichen Aus Uruk*) and these are retained here following convention[50]. A review by Steinkeller (1995a) highlights the uncertainty that remains with some of the identification of proto-cuneiform signs with later cuneiform ones.

Numerical systems

The numerical systems in proto-cuneiform were explored by Friberg (1979), and have been discussed by Englund et al. (1993) and Englund (1998)[51]. These systems did not survive into the following periods of cuneiform in precisely the same forms (Friberg 1991); this includes the capacity measure system referred to as the 'ŠE system' because it was largely thought to record amounts of grain in redistributive contexts. The use of different numerical systems to count different things (or count things in different contexts) has proven valuable to the process of deciphering proto-cuneiform.

[49] Although a number of these combine known signs with unknown ones—most productively, ZATU 737 'frames' eleven different signs including EN and AB.
[50] These sign names may in some cases be useful for analysis of the texts, but are also potentially misleading.
[51] The forthcoming volume of the series *Materialien zu den frühen Schriftzeugnissen des Vorderen Orients* (in preparation) also describes in detail the process of decipherment of the numerical systems (courtesy of R. K. Englund).

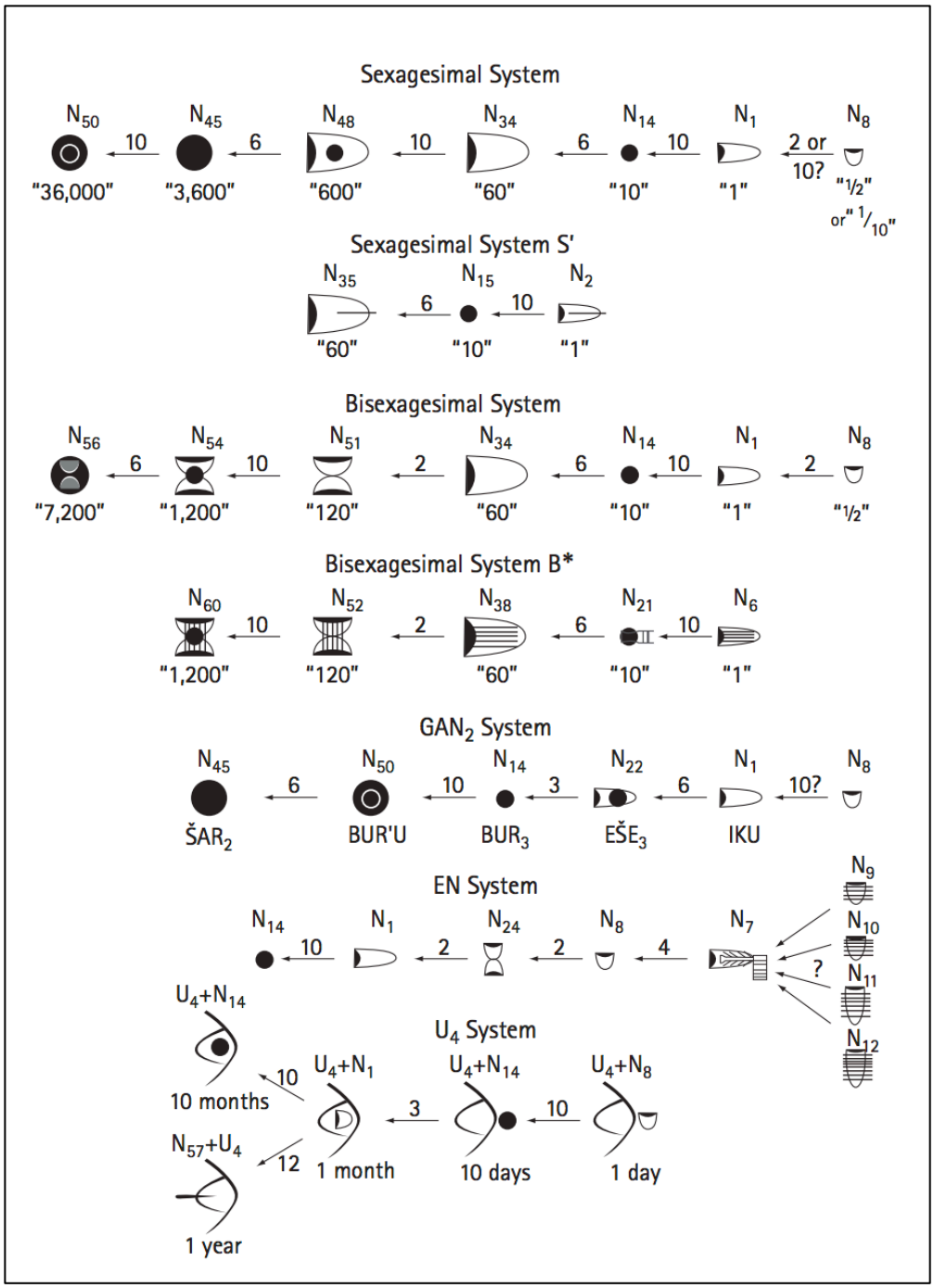


Figure 4.1 Proto-cuneiform numerical systems, after Englund 2011: 39 fig.2.4

Content

The clearest division in the content of proto-cuneiform texts is between administrative (85%) and lexical (15%) texts (Englund 1999: 35); however, few of the lexical texts are dated to Uruk IV script phase. In addition to the lexical and administrative genres,

a small number of texts can be identified as ‘school texts’ or scribal exercises, and only a single composition known from fifty-six texts and fragments may represent an early attempt at recording literature (Englund 1998: 99–102; J. G. Westenholz 1998; Civil 2013. Against this interpretation Velduis 2006: 193; Wagensonner 2010: 287). Beyond these basic ways to categorise texts, a full quantification of the different ‘types’ of administrative accounts in proto-cuneiform is not available, and remains too large a task to undertake here. This is primarily due to the continued difficulties in understanding many of the proto-cuneiform documents.

Some very terse (especially Uruk IV) proto-cuneiform texts are of ‘low informational value’ (Nissen et al. 1993: 32 and fig. 29) in that the economic situation in which they were used cannot be reconstructed based on the limited information conveyed by the signs and text structure. Other, more complex texts may offer more evidence to aid future research integrating study of sign use, text format, and numerical information. Englund (1999: 36) uses tablet format to propose a function distinction between ‘primary’ documents including ‘receipts, bills and simple transfers’, and ‘secondary documents’ which are longer with more complex tablet formats.

Topics covered in the texts, following Englund (1998) include the full spectrum of animals and animal products (from small livestock, cattle, swine, equids, fish, fowl); management of agricultural land; plants and manufactured products including textiles and vessels, distribution of grain and grain products of varying designations, and finally ‘labour organization’ (176). Matthews (2002: 16) summarises the content of the texts from Jemdet Nasr, the largest group of about 60 texts dealing with ‘measurement and/or disbursement of rations of grain’, dozens of other texts

recording various products, and twelve that 'deal with groups of labourers working for a central authority'.

A major gap in understanding of the proto-cuneiform texts is how to read and interpret the household and especially personal names in the texts. Krebernik (2002: 3) maintains that no proto-cuneiform personal names can be safely identified with later known Mesopotamian names (See also Edzard 1998 with a few tentative identifications). Research on proto-cuneiform personal names, in conjunction with a review of third millennium personal names more broadly, could be a point of significant advance in understanding proto-cuneiform. Such a study might face particular hurdles —for example, Krebernik (2002) and Balke (2014) have highlighted the practice of abbreviating personal names in early third millennium, which if present also in proto-cuneiform could contribute to the difficulty in identifying names.

Titles are understood somewhat better thanks to the lexical tradition, although it is often difficult to prove that later lexical traditions retained memory of either the phonetic or semantic values of proto-cuneiform titles. Nonetheless, in recent years proto-cuneiform titles and names have been increasingly compared to those found in other Early Dynastic corpora (e.g. Lecompte 2013, 2016). While prospects for full 'decipherment' of proto-cuneiform in the traditional sense may remain low, it seems likely that advances in the study of early third millennium onomastics could lead to identifications of many of the proto-cuneiform designations which are, for the time being, represented in purely conventional transliterations following Green and Nissen (1987).

Proto-Elamite writing

Writing and text structure

Proto-Elamite texts are written in a linear format, from right to left (in the original orientation[52]), with one or multiple entries following one after another. A text can be described in terms of three main parts: the header, the body and sometimes a summary—with an occasional fourth part called a subscript. Each entry in the body of the text ends with a numerical notation, and the next entry begins directly following with no space in between. The header, or first entry in the text, may contain different kinds of information from the remainder of a text's entries; through one interpretation, the header is not followed directly by a numerical notation (Englund 2004b), instead by the ideographic signs that make up the true first entry of the body of the text. It can be difficult to determine where the header ends and the 'first entry' begins. In some cases, writing proceeds onto the reverse of a tablet, continuing over the bottom edge. Some (but not all) texts are provided with an ideographic and numerical summary, and this is recorded on the top left reverse of the text after rotating it 360 degrees from the orientation of any body text continued on the reverse. A major advantage in analysing proto-Elamite texts over their proto-cuneiform contemporaries is that the linear writing format allows for study of sign ordering, which can provide clues about the classification and function of different signs.

[52] Following cuneiform convention, texts are published turned 90 degrees to the left, so that in publications they are to be read top-to-bottom then left-to-right.

Signary

The number of signs in the proto-Elamite writing system is still being evaluated[53], through the analysis of sign variants. Dahl's working signlist includes currently around 1400 unique signs. In Dahl's system, a large number of graphically related signs are recorded using a system of subcase letters— example, M3 and M3$_b$ different from each other in being mirror images. For a majority of signs, it is not yet clear if these variations reflect different meanings in the writing system, or if they are graphical variants of semantically identical signs. In addition to individual signs, proto-Elamite uses many complex graphemes, which are signs inscribed within other signs (Dahl 2005b).

The most basic division in types of signs is between numerical signs and non-numerical signs. The non-numerical signs in proto-Elamite are the subject of on-going categorisation into groups, with some overlapping, multivalent signs being identified. Englund (2004: 105) used the broad labels 'substantive' and 'qualification' to discuss the signs making up different parts of an entry. Progress in the categorisation of signs into different groups would represent a significant step forward in decipherment. Despite the present uncertainties, a few types of non-numerical signs can be discussed (see also Dahl 2005b: 86):

1) signs that represented counted objects ('object signs')
2) signs that qualify these counted objects in unclear ways
3) signs often used in the 'headers' of texts, some of which may represent 'households' or indicate the account type
4) signs that make up longer designations in text body entries, which Dahl (2013: 250) hypothesizes might represent a syllabary
5) signs that qualify the context or product of the capacity measure notations(M288, M305, M219?)

[53] Englund 2004b: 103–4 and Dahl 2013: 234 ff. provide summary and commentary on the published sign-lists.

A few object signs have been the most easily deciphered—the object signs for sheep and goats, and for counted human women and children were identified through comparison with proto-cuneiform. A series of signs depicting equid heads may in fact refer to equids, providing a rare set of recognisably pictographic signs in proto-Elamite (Potts 2014b). Object signs usually appear at or near the end of an entry before a numerical notation, and often in the summary lines, both circumstances which help in identifying further object signs that do not have proto-cuneiform parallels. However, object signs are not always the last sign in a body entry: in some instances, signs following an object may 'qualify' the type of object (Englund 2004b: 105).

Numerical systems

The numerical systems have been important to advancing the decipherment of proto-Elamite. Five or six[54] main, and three derived numerical systems have been identified in proto-Elamite (fig. 4.2), each of which has a different field of application —that is, each counts different types of things. The application for each of these systems has been established to a certain extent, despite many remaining uncertainties on the meaning of proto-Elamite signs. The use of parallel numerical systems in proto-cuneiform documents has provided the primary evidence, and internal textual clues in proto-Elamite supplement these hypotheses. Most of the major proto-cuneiform systems have near-equivalents in proto-Elamite, however no proto-Elamite time-keeping system has yet been identified to parallel the proto-cuneiform system which

[54] An area system may be identified but is attested in only one text, MDP 26, 5224 (Englund 2004b:118).

indicates days, months, and years (Englund 1988: 133 ff.), and is closely related to the capacity measure system because of the proto-cuneiform grain distribution practices. Conversely, only one proto-Elamite numerical system doesn't have a parallel in proto-cuneiform: a proto-Elamite decimal system is used to count animals and some humans, including M388, M54 and sometimes M72, which are the focus of this dissertation.

The sexagesimal system, known also in Mesopotamia, may have a smaller range of application in proto-Elamite. In Mesopotamia it counts a wide variety of objects and people, whereas in proto-Elamite the system's use is restricted to only some signs thought to represent humans and in a few cases goods, including jars of ale and perhaps arrows (Englund 2004b:110). Englund (2004: 108) suggests the sexagesimal system might count 'high status' humans and valuable goods, particularly because the humans *not* counted in the sexagesimal system (but instead in the decimal system) sometimes include those identified as lower-class workers by use of the signs mentioned above (see Dahl et al. 2018 for recent discussion of worker category signs).

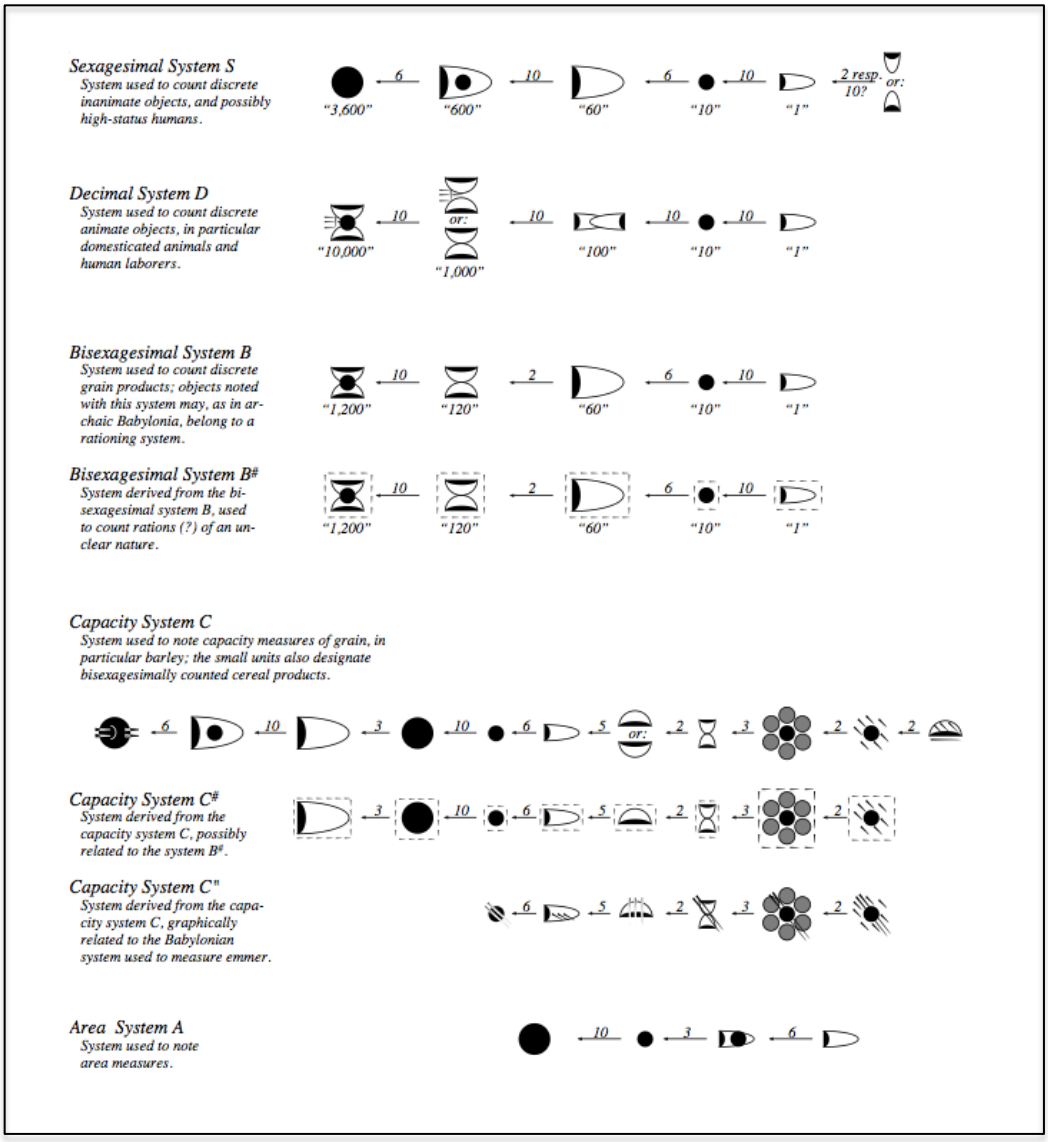


Figure 4.2: Proto-Elamite numerical systems (Englund 2004b: 107 fig. 4.5)

Content

The content of some texts has been partially understood, through a combination of evidence including: (rare) sign similarities with proto-cuneiform; the content-specific nature of the numerical systems; and the structure of proto-Elamite texts, which include hierarchies in the ordering of signs within both entries and the text as a whole—as well as the subsuming of certain signs under others in a text's numerical summary.

The proto-Elamite corpus, as so far understood includes:

- Counts or inventories of people, probably relating to labour organization; in some more complex texts 'workers' are divisible into teams headed by what may be foremen (e.g. text MDP 17, 45 fig. 6.27a)
- Receipts and accounts with capacity measures that probably represent grain 'rations' for these workers or worker teams (Nissen et al. 1993: 78–9)
- Receipts and accounts relating to sheep and goats herding, and their products (primarily dairy) (Dahl 2005a: 98)
- Texts relating to planning of agricultural fields and their resources (Englund 2004b: 19), including one possible field measure text (MDP 26S, 5224, Friberg 1997:16–18)
- 'bread and ale' calculation texts (Friberg 1978: 29 ff.)
- two possible 'metro-mathematical school texts' (MDP 17, 328 and MDP 26, 362 Scheil 1935 vii-viii; Damerow and Englund 1989: 18–19 n. 51 and 53)

The remainder of texts include a wide variety of accounts quantifying grain and/or other things in contexts not yet understood (Damerow and Englund 1989: 31).

As listed above, the strongest comparisons between proto-cuneiform and proto-Elamite texts can be made with respect to accounts of workers, as discussed by Nissen et al. (1993: 70–83) and sheep and goat texts as studied by Dahl (2005a). An important exception to the comparable genres between early cuneiform and proto-Elamite documents seems to be the lexical genre (Dahl 2013: 258), its absence in Proto-Elamite being inferred by the observation that no Proto-Elamite texts without numerical signs have been identified. The content and accounting contexts of many other texts are not well understood, although the numerical system being used can very often be identified.

Further categorisation of proto-Elamite tablets might be built upon the use of different 'headers' at the beginning of texts, made up of a set of signs understood as 'household' signs. For example, the sign M157 is used in around 355 texts, in the great majority of cases as the first (and sometimes the second) sign in the text. In the very long text MDP 6, 5242 graphical variants of M157 are use in roughly even

intervals throughout the text (entries 27', 43', 69', 78', 92', 111' and 112'), suggesting it could be a compilation of smaller 'M157 accounts' (fig. 6.26).

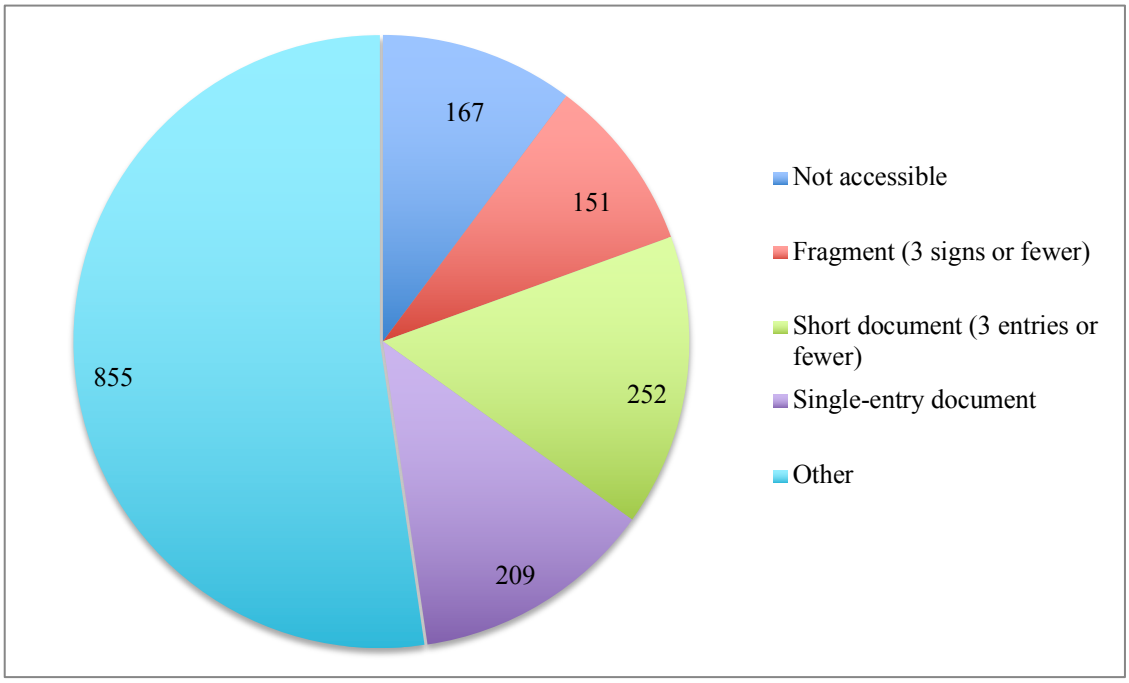
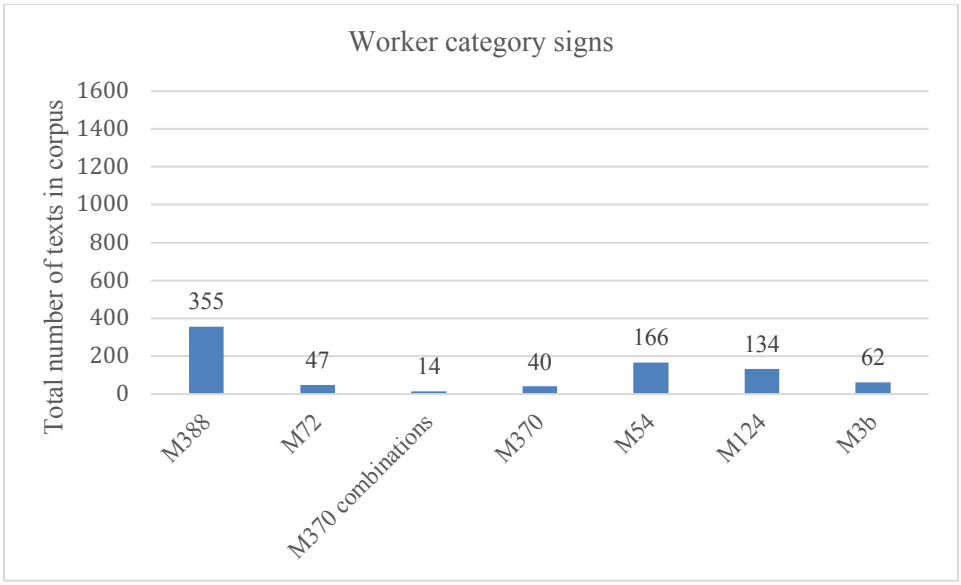
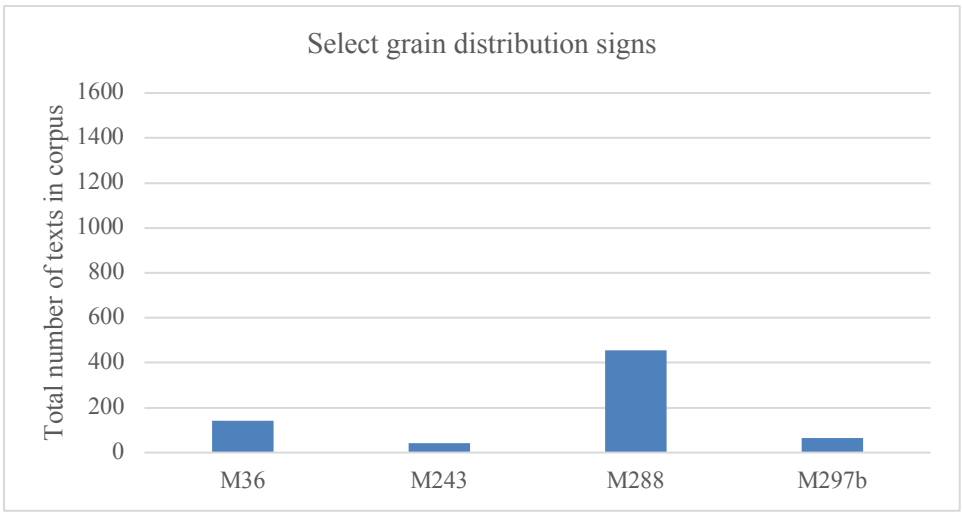


Figure 4.3: Proto-Elamite texts by length and completeness. Data drawn from 1636 texts catalogued on the CDLI data-base. 'Not accessible' includes texts that do not yet have transliteration (and usually no image) available on the CDLI, most of which are currently unpublished texts from the Louvre, to be available in a forthcoming publication by J. Dahl.

1,469 published and transliterated texts are available on the CDLI, out of a total catalogue of 1,634 texts. Englund (2004: 103) cites 10,000 lines of text. From the available texts, over half are (or appear to have originally been) longer than three entries. The longest texts include the three or four long ration texts (Appendix pages 446–9), which were originally between 100–200 entries in length. The variation in length of documents suggests that both accounts and receipts (following the terminology of Dahl: 2005b, adapted from discussion of Ur III administration) are present in the corpus, with single-entry documents probably representing 'primary





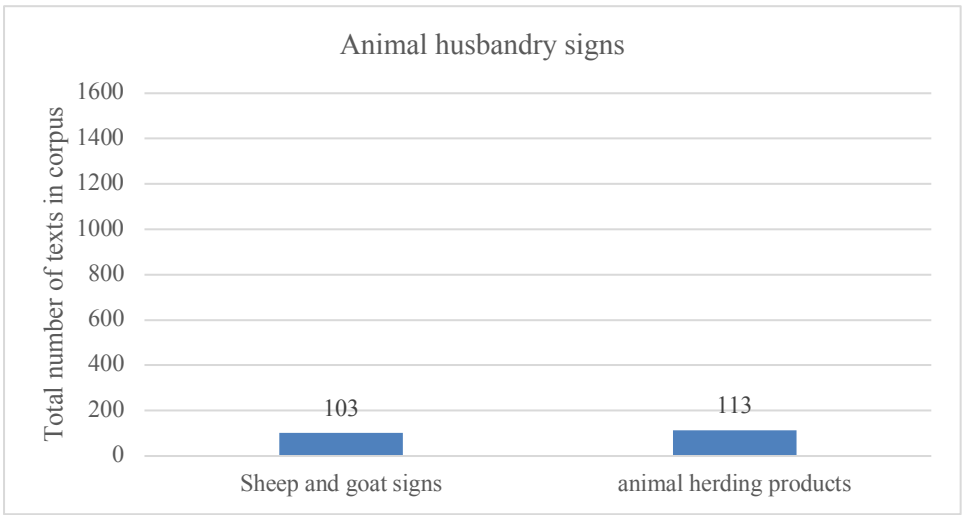


Figure 4.4: Charts revealing the extent to which proto-Elamite texts may deal with the administration of workers (top), grain distributions (middle) and sheep and goat herding (bottom) as currently recognized. The charts reveal that only a small portion of texts out of the total corpus deal with each of these subjects, highlighting how the subjects of many more proto-Elamite texts remain unknown.

documents or receipts' (Dahl 2005b: 106). In addition, it is supposed that shorter accounts (perhaps including text in the 'short complete document' category) were sometimes compiled into accounts covering longer time-periods, and one or a few examples of this practice can be identified in texts from Susa and possibly Tal-i Malyan (Dahl 2005b: 106; Stolper 1985: 10). It is not yet possible to represent the relative numbers of different text genres in proto-Elamite, since so many of the signs and contexts remain undeciphered.

Chapter 5a: Proto-cuneiform evidence for labour organization

Introduction

Discussion of labour organization during the early third millennium has been heavily influenced by later cuneiform records of household dependents, slaves, allotment holders and other workers engaged by large households and early states—with the most numerous textual examples coming from the Ur III period. Such examples have tenuous but crucial textual links to both proto-cuneiform and proto-Elamite documents, through the use of key worker signs and the redistributive practices discussed below. Chapters 5a and 5b outline some of the central evidence for scribal involvement in labour organization:

1) the key signs that may be used in labour-related accounts
2) the types of texts listing workers themselves (including tallies, rosters or rations texts)
3) the relevance of redistributive evidence to labour organization
4) other kinds of textual evidence for labour organization

Some key proto-cuneiform signs relating to labour organization

The focus of this dissertation is on comparing two sets of 'worker' signs that have been cited as the standard lower-class labourer categories in proto-cuneiform and proto-Elamite. However, the overview presented here and chapters 6a–8a highlight that in proto-cuneiform the uses of KUR_a, SAL.(KUR_a), and TUR for humans rarely provide clues about the productive roles of these individuals or their link to a rationing system (with some possible exceptions for SAL); instead they sometimes appear registered as commodities. While SAL is used in a variety of contexts including perhaps as a 'worker' receiving rations (chapter 7a), KUR_a is not a standard

term for a 'worker' in proto-cuneiform (chapter 6a). Fuller study of proto-cuneiform labour administration in the future could focus on clarifying the various terminology for labourers and other personnel, however this dissertation shows that texts recording KUR_a and SAL in human-resource contexts represent only a marginal part of the picture of labour organization available in proto-cuneiform. Higher-level distributions, calculations for efficient use and distribution of resources, and to some extent projections of production and labour-cost, appear to be more central concerns of the proto-cuneiform accounting system.

A few of the most important signs to have been identified as possibly related to work-teams or labourers in proto-cuneiform are briefly discussed here. Most of these have been identified based upon later cuneiform parallels, although it is not usually clear how directly later meanings can be inferred for the proto-cuneiform sign uses.

$PAP_{a–c}$ and PA / ugula

Proto-cuneiform $PAP_{a–c}$ (=PA_4, ZATU 427)  is one of the two 'sticks' that make up the sign PA  . It is a very common proto-cuneiform sign, appearing in around 500 texts, in diverse contexts and often in what may be officials' designations or personal names. PA is also known in proto-cuneiform, in c. 317 texts in a variety of titles and designations. Sarzyńska speculated that PA might have been used sometimes as 'the designation of the simple shepherd profession' (2002: 14). Englund (1998: 70) relates the use of both PAP/PA_4 and PA to later Sumerian ugula (PA) and considers it to sometime indicate labour organization contexts in proto-cuneiform.

Ugula may be translated in third millennium labour administration contexts as 'foreman of a work-team', and the workers they oversee are often erin$_2$ or guruš; ugula/*waklu* is also used to refer to an individual in charge of a wide variety of persons and administrative units, including craftsmen, temple personnel, and military units (CAD vol. 1: 279). As foremen of work teams, ugula were sometimes of comparable, though usually of lower rank to the nu-banda$_3$. Ugula individuals were included in ration and personnel lists, often (but not always) receiving more rations than the workers they were in charge of.

Sumerian ugula is almost certainly a loanword from Akkadian that is used from the third through first millennia. The earliest attested form is Old Akkadian *aklu* written both syllabically (a-ak-lu) and with the sumerogram (Lu$_2$) PA[55]. Westenholz (1999: 33) implies that the borrowed form might have been an early form **waklum*, recognising in the move from Akkadian to Sumerian 'an early development from wa- to u- as also seen in a proposed transformation of Akkadian mat warîm (in fact, Diyala) to Sumerian ki-uri (Sumerian word for the land of Akkad)'. The form *waklum* is also attested from Old Assyrian, when it was one of the titles used by the ruler of Assur, in particular when the king was addressing himself in letters, often to the kārum. The title thus reflects the king's role as head or overseer of the assembly in Assur. The use of *waklum* as a king's title appears to be restricted to Assyria (Larsen 2015: 108 ff.).

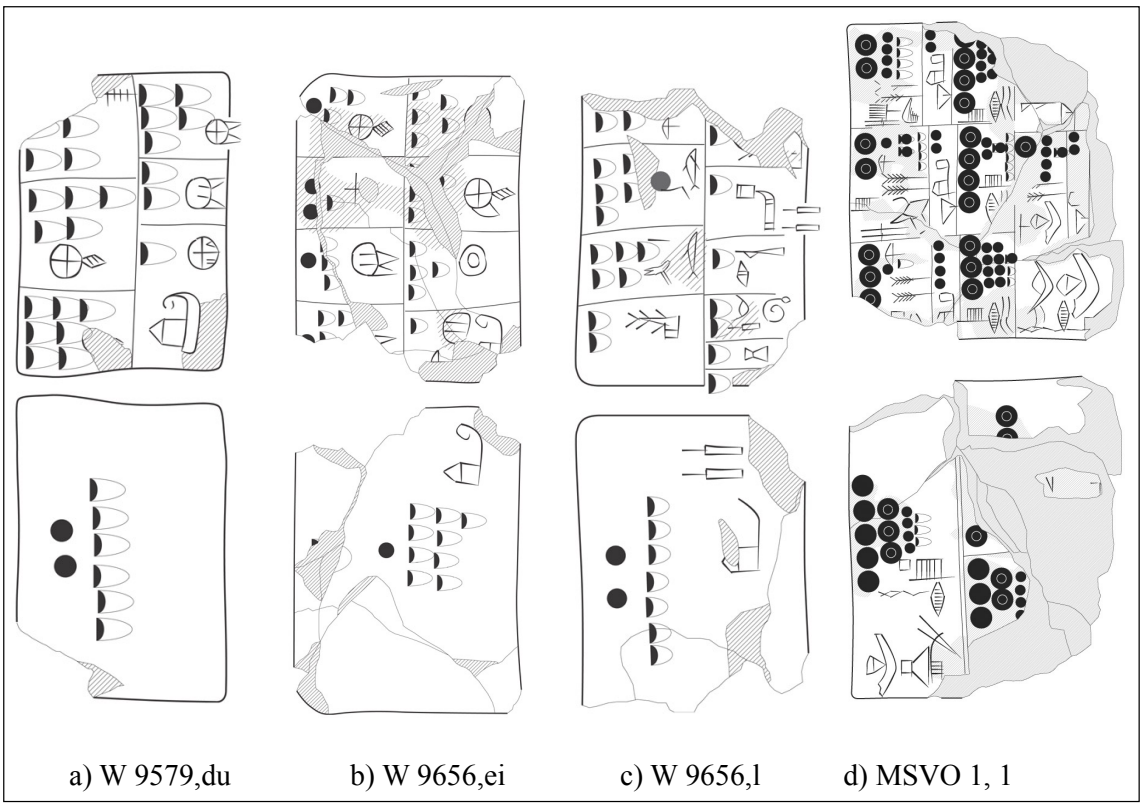
[55] In lexical texts, this Sumerogram also has other Akkadian readings including *šapiru, rabannu,* and *abu ṣabi*. (CAD vol. 1, 277).

GURUŠ (ZATU 247) 

guruš was a common Sumerian word for young male subjects—usually in the context of labour projects— in a wide variety of text corpora available to us across the third and early second millennia. Its appearances in proto-cuneiform are limited and it is difficult to verify that the sign held a similar meaning as in later third millennium labour administration texts. Steinkeller (1995a) has questioned the identification of the proto-cuneiform sign that Green and Nissen (1987) identified as GURUŠ. Whether read as KAL or GURUŠ, the sign ZATU 247 appears to depict a 'ceremonial threshing sledge' comparable to objects depicted with third millennium Mesopotamian glyptic images of sledges ridden by humans (Steinkeller et al. 1990).

An important link to agricultural work is the text MSVO 1, 1 (fig. 5.1d) which lists what may be teams of field workers, categorised as GURUŠ SAL, for the fields of officials. The designation GAL_a GURUŠ, known from archaic LU_2 A as well as adminstrative texts, could refer to an 'overseer of the GURUŠ' (Zsolnay and Westenholz 2016: 16). Yet other texts provide challenges for understanding proto-cuneiform GURUŠ, including several texts that use the sign in contexts of livestock. Text W 9579,du (fig. 5.1a) counts 26 sheep and goats, divided by species, sex and age, and adds the sign GURUŠ in the final entry to unclear purpose. This may be clarified by W 09656,ei (fig. 5.1b) which similarly counts various small livestock, and includes a final case $1N_1$ TUG_{2a} GURUŠ BA, which may indicate that the wool from the sheep (and hair from a goat?) was used in garment production or raw material distribution to GURUŠ personnel. The summary of the text on the reverse is the total number of livestock (79 animals) with the sign GURUŠ. If this interpretation is

correct it is also an interesting example of the final case in a text (obverse, col. II, iv) providing information qualitatively different from the 'counted' objects in the text, a practice more apparent in the Early Dynastic I–II texts from Ur.



a) W 9579,du b) W 9656,ei c) W 9656,l d) MSVO 1, 1

Figure 5.1: Some Uruk texts recording GURUŠ

By the Fara period the sign GURUŠ (LAK 648) is used to indicate both named and unnamed individuals in worker rosters. Two rosters from Šuruppak attest to the presence of hundreds of guruš from other Sumerian cities (Adab, Lagaš, Nippur, Umma, Uruk and (separately) Kullab) who were 'stationed' at an unidentified administrative centre, KI.EN.GI[56]. Further ration texts included references (around 70 in total) to ration-receiving guruš from these same cities (Pomponio and Visicato 1994: 10–11). Therefore, the earliest substantial evidence for this term suggests guruš

[56] For most recent discussion of this place name Wencel 2015.

represented a workforce that could be transferred between urban centres. Texts from Šuruppak also recorded guruš-me$_3$, 'soldiers'. (Pomponio and Visicato 1994: 11). From Old Akkadian texts at Girsu (e.g. CT 50, 103) dozens of guruš are recorded from Nina and Lagash, each under a nu-banda$_3$[57], and summarised as lu$_2$ zi-ga-me, 'men that had been called up' (zi-ga). The sign was also used as a logogram in Old Akkadian – GURUŠ.GURUŠ = *ummānum* 'troops'.

There are a few exceptions to the widespread use of guruš throughout the third millennium. The term is found only once in the Ekur temple archives of Old Akkadian Nippur, where instead lu$_2$ is used for 'male worker' in work groups alongside geme$_2$, 'female worker' (Westenholz 1999:62 n. 255). In the Akkadian-speaking region of the Habur Triangle at Tell Beydar (Early Dynastic IIIb), guruš is not attested. Instead, a variety of workers are identified by their specialisation, the most common agricultural labourer being the LU$_2$-geš-DU. However, some semitic-speaking environments use the term, including Ebla and Sargonic Tutub (Sallaberger 2014: 43).

The person category fell out of general administrative use during the Old Babylonian period. Therefore, the fading out of the term around the beginning of the second millennium may also reflect that the socio-economic traditions in which a person was understood to be a guruš had been transformed. Postgate suggests that guruš find an equivalent in the Old Babylonian *muškēnum* class (1992: 239). In the lexical tradition it is equated with *eṭlum*, Akkadian '(able-bodied) young man'. In Old Babylonian

[57] Another common 'work group' leader is the nu-banda$_3$, a term which is understood to originally be a Sumerian administrative term loaned into Akkadian (in a reversal from the situation with ugula) as *laputtum.* The term is known as early as the Early Dynastic texts from Ur, but the specific combination NU TUR (banda$_3$ = TUR) has not been identified in proto-cuneiform.

Sumerian literary contexts the term guruš continued to be used. It may retain its connection with ideological redistributive systems in the literary text the *Marriage of Martu*, which suggests that guruš was understood to represent a young unmarried man and was in this way contrasted with Lu_2:

22. niĝ$_2$-ba lu$_2$ dam tuku 2-am$_3$ i$_3$- ĝa$_2$-ĝa$_2$
23. niĝ$_2$-ba lu$_2$ dumu tuku 3-am$_3$ i$_3$- ĝa$_2$-ĝa$_2$
24. niĝ$_2$-[ba] guruš saĝ-dili 1-am$_3$ i$_3$- ĝa$_2$-ĝa$_2$
25. ^{d}mar-tu dili-ni 2-am$_3$ i$_3$- ĝa$_2$-ĝa$_2$

'The ration of a married man (lu$_2$ dam) was established as double, the ration of a man with a child (lu$_2$ dumu tuku) was established as triple; the ration of a single man (guruš saĝ-dili) was established as single; but the ration of Martu, though being single, was also established as double' (ETCSL).

ERIMa-b 

Green and Nissen (1987: 199) identified ZATU 143 as ERIM, ERIN$_2$, although Steinkeller contests this, citing instead ZATU 55 (Green and Nissen's 'BIR$_3$'). The sign is a representation of a yoke. The sign ERIM in the third millennium could be used to indicate literally yoked teams of animals, but also teams of workers or troops. In the Sargonic period the term eren$_2$ could refer to both groups of agricultural workers and conscripted military troops; Foster (1982: 22 fn. 3) suggests that in Sargonic Umma and elsewhere 'the term seems most often to have referred to mobile teams of workers, many of whom may have been prisoners of war'. In the Ur III period eren$_2$ (wr. ERIM) may be classified as 'free' personnel (alternately called dumu-gir$_{15}$) engaged in corvée labour for the state (Steinkeller 2013b: 350), and Ur III labour organization practices have been referred to as an 'erenage' system (Steinkeller 2004: 93). eren$_2$ can normally be contrasted with a group of 'lower status' workers, the UN.IL$_2$ but Studevent-Hickman (2008: 145) points out that these designations

sometimes overlap, and suggests that the terms may refer to ‘work assignments’ or ‘occupation designations’ rather than social classes.

ZATU 659

Perhaps more important to understanding the role of proto-cuneiform in organising a workforce than any of the signs mentioned above, is the set of signs that may represent ‘man-days’ of hired work (Friberg 1999: 17). These signs represent periods of time along with the amount of grain for distribution to one worker for that period. This abstracted ‘man-day’ rate is attested in a series of accounts and school texts from Jemdet Nasr (Friberg 1991; 1999: 119). Englund (2001: 32) understood ZATU 659 itself as a grain product. These signs may represent periods of time.

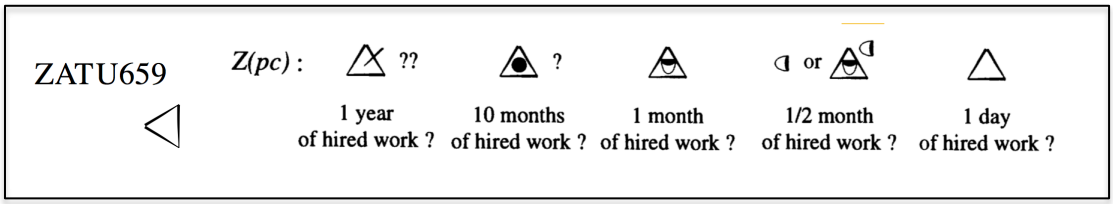


Figure 5.2: Proto-cuneiform signs representing ‘man-days’ of work by indication of the capacity measures for the amount of grain to be distributed as rations for that work. After Friberg 1999: 199.

APIN$_{a–c}$

The sign APIN$_{a–c}$ depicts a plow[58]. The sign has a later Sumerian value of engar, ‘farmer’ or ‘agricultural estate manager’, and Green and Nissen (1987: 176) apply this value already to the proto-cuneiform sign. APIN$_{a–c}$ is used in about 187 texts, not always with clear significance (for example, it appears in a possible personal name in W 24162 as NIN APIN$_a$ BALAG). The official NAM$_2$ APIN$_a$ is listed 8th in the composite archaic LU$_2$ list, and APIN$_a$ SUHUR followed by MAR$_a$ APIN$_a$ make up entries 73 and 74. In Uruk IV text W 9656,dr, the combination UŠ+UŠ GU$_4$ APIN$_a$ is

[58] Or technically speaking, an ard (Potts 1997: 73).

used in each of the two text cases, along with a numerical notation which could count agricultural workers or work teams.

GU$_7$ 

The common sign GU$_7$, appearing in around 245 texts, normally occurs in the colophons of texts or sometimes in cases that appear to summarise sections of the text (e.g. MSVO 1, 103). Some of the products involved in the administrative actions represented by GU$_7$ are named in MSVO 1, 93. This text shows the development of grain equivalencies for a variety of products— including bread and ale on the obverse, and sheep, fish, textiles and dried fruit on the reverse (Englund 2004a: 44 for [reconstructed] drawing and discussion). The account is labelled GU$_7$ along with the designation for the settlement Jemdet Nasr (NI$_a$ + RU) in the colophon, with a further qualification of GIBIL 2N$_{57}$ SU. Such a collection of products (grain, ale, wool or textiles, and fish) is comparable to redistributive traditions known across third millennium cuneiform texts (Gelb: 1965)**.** While GU$_7$ has not been identified in relation to the rare category of counted KUR$_a$ humans, at least one text records emmer rations for various individuals including SAL in their designation (MSVO 1, 44, page 269).

BA and GI 

BA and GI were initially proposed as evidence of Sumerian language in proto-cuneiform for ‘distribute’(Sum. ba) and ‘return’ —the latter is written in later Sumerian texts with the sign gi$_4$, and by hypothesis in proto-cuneiform the sign depicting a reed, GI (Sumerian for ‘reed’ is gi) was used by homophony to indicate

gi$_4$ ‘return’ (Vaiman 1974); however, the uses of the sign may not warrant this. Most importantly, cases qualified as BA and GI respectively are totalled together in one text (MSVO 1, 185 Englund 1998: 61–63). Woods (2015: 125) added the suggestion that GI stands for Sumerian gin, ‘qualifying items that are confirmed to be on hand’, while Monaco (2007: 11 fn 69) suggests that BA distributions refer to rations for individuals within a household, whereas GI refer to external expenditures. Neither of these plausible suggests has been proven through contextual study of the sign uses. BA and GI are also described by Johnson (2015) as oppositional designations of officials that appear in ‘subordinate staff lists’ (e.g. IM 73409,2; MSVO 1, 112; W 19408,88) and administrative documents.

Counts of personnel with SAL and KUR$_a$

Englund (2009: 15; 2011) cited the existence of around 50 tablets that record ‘dependent labourers’ along with their personal names. About half of these include children along with adults, following some different sets of terminologies (chapter 8a). Most of these are identified as lower-class humans by their use of KUR$_a$, SAL, and/or TUR[59], but a few include instead AL, EN.TUR, and ‘yearling’ designations. Both of these groups represent less than 1% of texts in proto-cuneiform. The different functions of the signs KUR$_a$, SAL, and/or TUR in proto-cuneiform mean that a simple count of their uses in the corpora does not reflect the extent of administrative control over slaves or dependents (contra Algaze 2013:129–30; Asher-Greve 2008: 121). Therefore, chapters 6–8 examine the uses of these signs in further detail to help

[59] By inference from the discussion in Englund 2009—no list of the specific 50 texts is provided, but a similar number is reached in this dissertation by identifying all texts in which KUR$_a$ or SAL may represent humans, plus a few other similar texts.

clarify the number and types of slave or dependent-related texts in the proto-cuneiform corpora.

Uruk IV 'receipts'

Surprisingly, the most numerous uses of KUR_a as a possible counted human appear in Uruk IV rather than Uruk III texts. A number of these Uruk IV texts have been classified as 'receipts' (Englund 1995)[60]. These are the simple rectangular documents[61] that record small numerical counts (most often $1N_1$ or $2N_1$) along with a few cuneiform signs. Such receipts may record small numbers of livestock or products (e.g. jars in W 9579,ah, figure 5.6e), but often the object being counted is unclear. Around two dozen such documents include either the signs KUR_a, SAL and/or GURUŠ (fig. 5.3–5.5), with about twice as many using SAL than KUR_a. Of these receipts, only six texts use both signs in the contrasting cases (fig 5.5), and these offer the most explicit evidence that SAL and KUR_a represent an opposition between female and male. In fact, these documents provided the most important evidence for Vaiman (1972/1989) when establishing the proto-cuneiform terminology for slaves and the meaning 'male slave' for KUR_a.

Many of receipts including the use of one of these signs, however, cannot be securely shown to actually count SAL or KUR_a as objects (e.g. humans), since the signs may be part of names (titles, personal names, household names) or qualifying signs for other, unidentified objects. Yet text W 20854 (fig. 5.5f), recording only one KUR_a and

[60] Englund (1995: 35) identified a particular group of these texts as 'receipt[s] by a named individual of one or as many as several head of cattle', identified by the signs AB_2 and GU_4.
[61] A few appear oval-shaped (e.g. W 6738,b) or with less regular corners (e.g. 9123,w).

two SAL, confirms that KUR_a and SAL could sometimes be counted objects, and function as contrasting categories. In a few cases, the 'counted' sign of one category appears to be GURUŠ KUR_a (once in opposition to SAL), which provides some evidence that this category of individuals may have been male personnel, although the significance of proto-cuneiform GURUŠ is unclear. Receipt W 9579,bt (fig. 5.6f) may count 11 UDU (sheep) and by hypothetical translation two slaves of the AMA-type, designated by the signs $ERIM_a$ AMA_a, perhaps for the work of grain-grinding (GUM_a). None of these texts is so far known to record TUR 'children', but W 9655,t appears to count $3N_1$ $2N_8$ $SAL.KUR_a$ and 1 KUR_a— that is, 3 and 'two halves' $SAL.KUR_a$ which by hypothesis represents three women and two 'children' (fig. 8.9a).

The purpose of writing short records of objects and possible slaves is not obvious. While it is assumed that the numerical system represented is the sexagesimal, this is not certain. Text W 9579,bw (fig. 5.7a) uses SAL and other signs with a numerical notation in the EN system, which has an unknown application, perhaps recording goods by weight (Nissen et al. 1993: 28); this system is known only from the Uruk IV period.

Texts similar to these receipts rarely appear in the Uruk III period corpora from Uruk and elsewhere. Englund (1995: 35) suggested that these simple receipts were compiled into more complex documents, but no cattle or KUR_a/SAL receipt can be shown to directly correspond to the information on a more complex document. Do these documents record 'transactions' of human slaves? A possibility raised here is that comparison can be made between some of these documents and other early

Mesopotamian traditions of ceremonial gift-giving or offerings. One of these is the long-standing Mesopotamian a-ru-a institution, for which textual evidence lists 'people (mainly women and children), animals (cattle, sheep, goats and equids), objects (rings, boats, and millstones) and raw materials (such as wool and bitumen), as a-ru-a 'given ex-voto' to the temples' (Gelb 1972: 5). This could be supported by the signs included in some of the proto-cuneiform receipts, including boats (e.g. W 9656,gp, fig. 3.8) and livestock (fig. 5.6a). Another gift-giving tradition is the maš-da-ri-a known from c. 80 texts from pre-Sargonic Girsu (for an overview of maš-da-ri-a, see Prentice 2010:187 ff.). In this tradition, important individuals (both men and women) brought for offering usually a single animal, but sometimes other goods; this presentation was recorded by a scribe who noted the name and office of the gift-giver. The gifts were brought to either the E_2-MI_2/^{d}ba-U_2 or the palace, and the most common 'givers' were sangas, temple administrators (note Uruk IV receipts W 6738,b; W 9579,o [fig. 5.5a]; W 9579,aa [fig. 5.5b]; W 9579,cf [fig. 5.3a] among other examples). Such a tradition may be observable on a wider regional level during the Early Dynastic III period— from Susa, Ur, Khafaje, and Mari— in iconography involving men holding lambs or kids and sometimes followed by high-status women who were making the gift (Prentice 2010: 189).

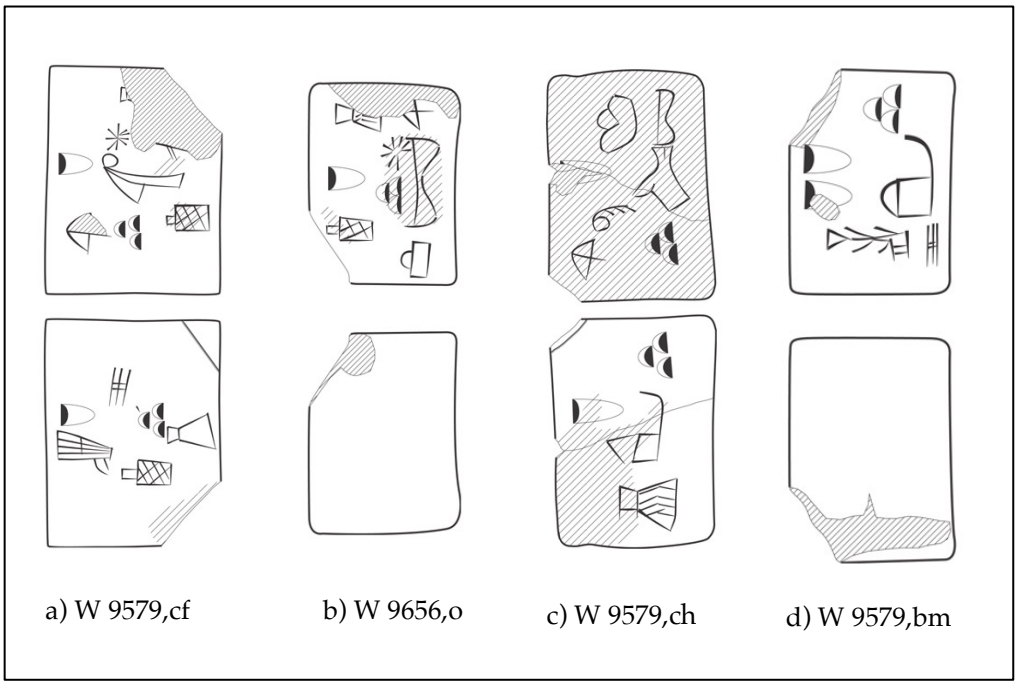


Figure 5.3: Uruk IV receipts including the sign KUR$_a$

Figure 5.4: Some Uruk IV receipts including the sign SAL. See figure 7.9 for a complete list.

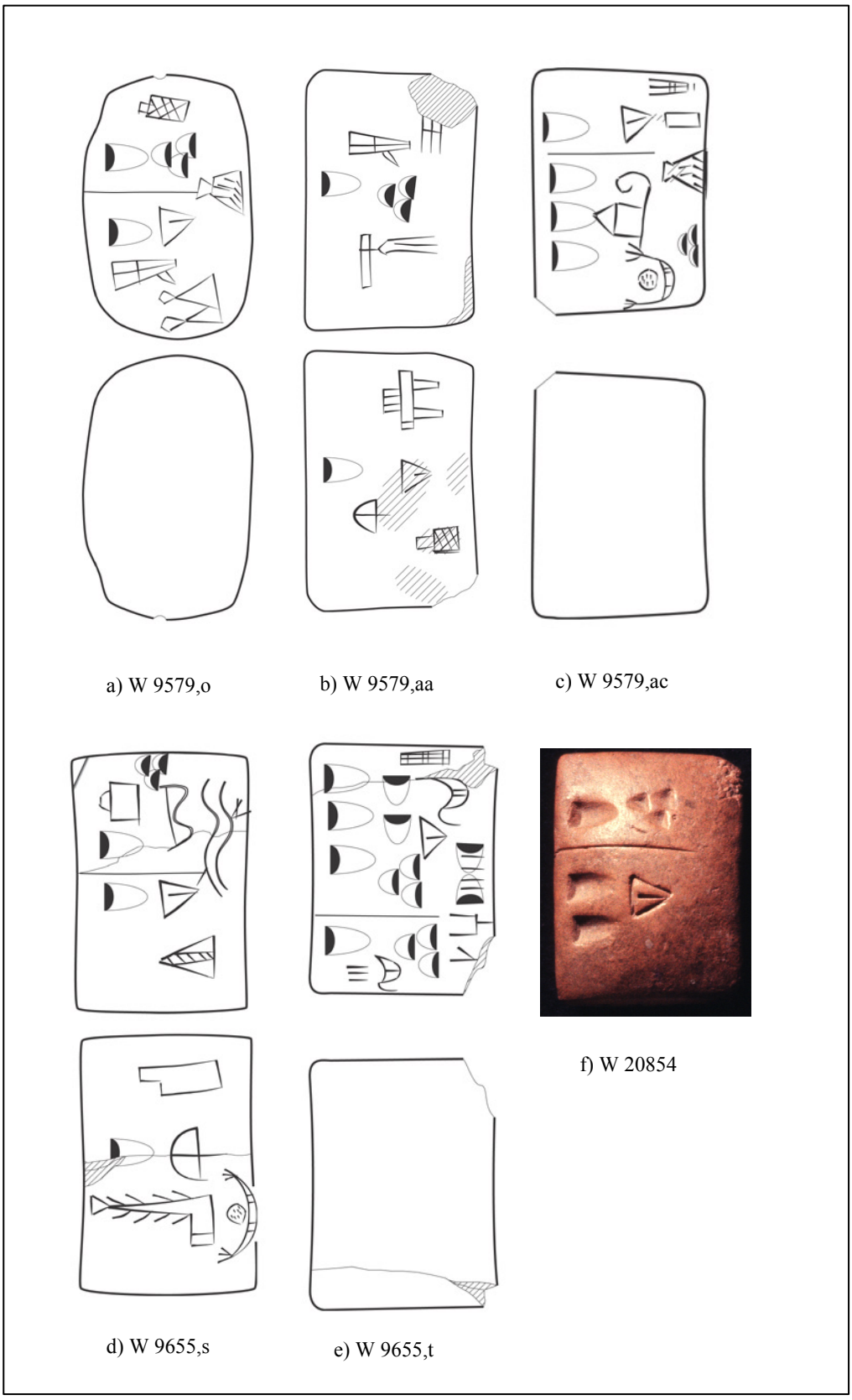


Figure 5.5: Uruk IV receipts including the signs SAL and KUR$_a$

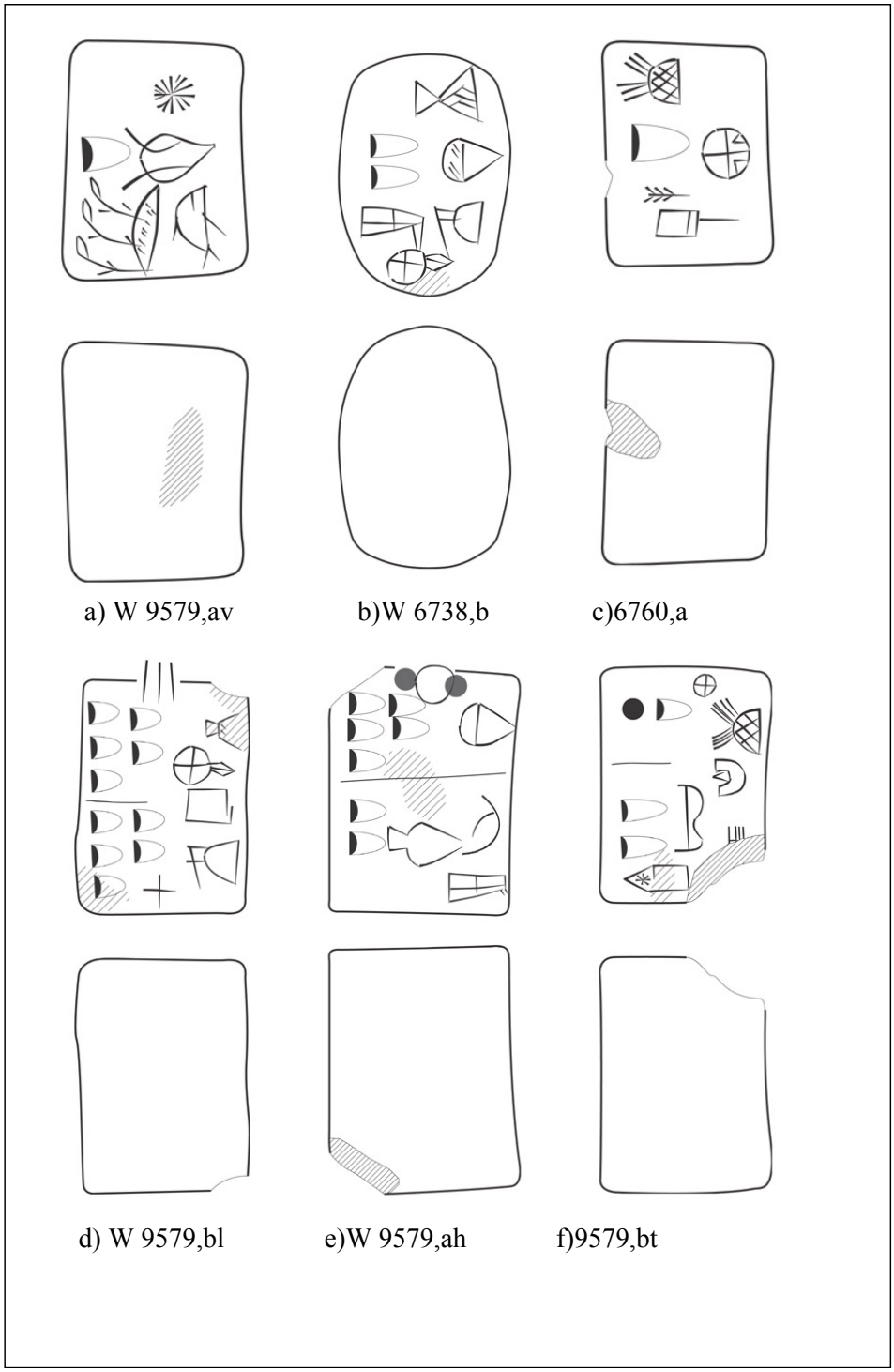


Figure 5.6: Other Uruk IV receipts

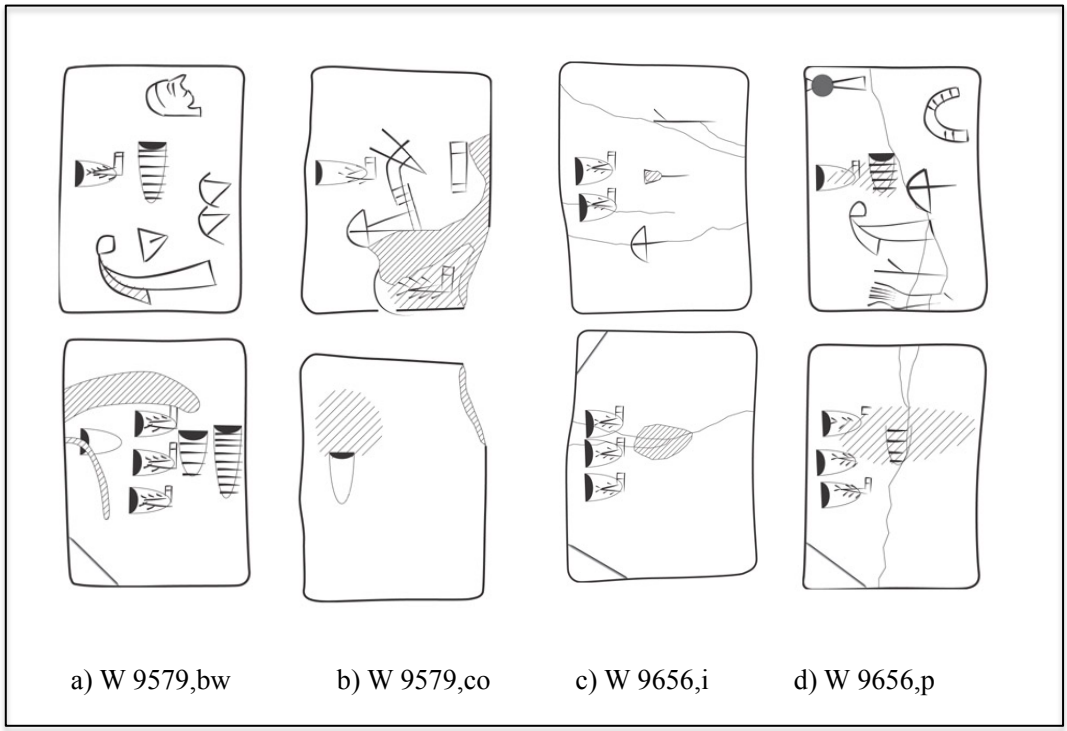


Figure 5.7: Uruk IV receipts in the EN system of unclear meaning

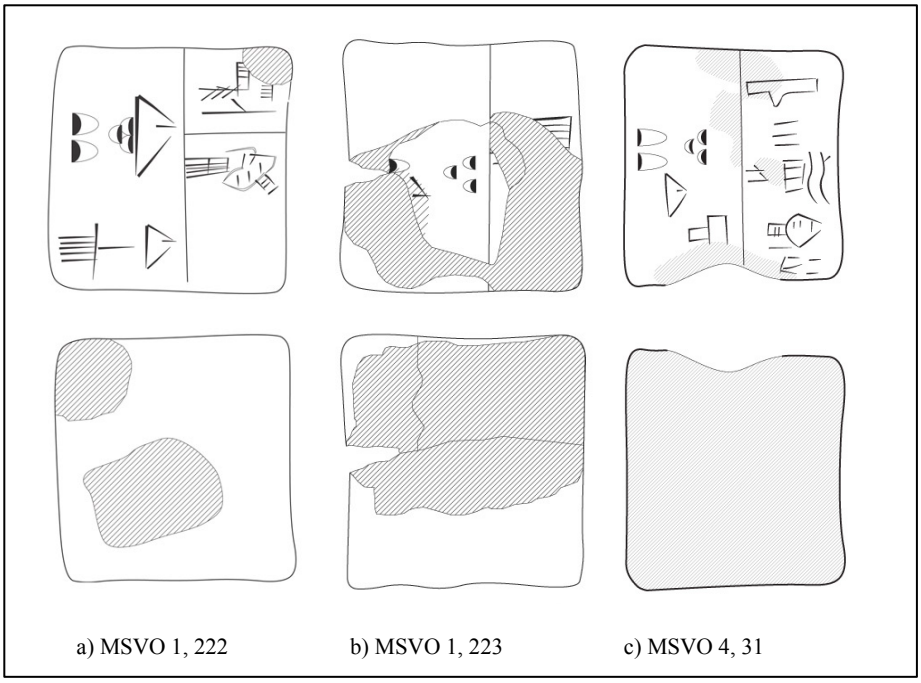


Figure 5.8: Uruk III-period texts that appear similar to the Uruk IV receipts.

Jemdet Nasr SAL.KUR$_a$ 'receipts'

Three examples of simple receipts with SAL.KUR$_a$ dating to the Uruk III (rather than Uruk IV) period are known from Jemdet Nasr (fig. 5.8), although these texts include the addition of horizontal case division with subcases that might include 'personal names' similarly to other Uruk III documents. Based upon the limited evidence provided by the proto-cuneiform signs and text format, these tablets could be hypothesized to represent a small-scale Uruk III period continuation of the cultural and economic practice behind the Uruk IV receipts from Uruk discussed above. On the other hand, the use of the combination SAL.KUR$_a$ may also suggest that they relate to the larger Jemdet Nasr 'captive-taking' SAG x MA accounts MSVO 1, 212–214 (fig. 5.12).

Uruk IV accounts with SAL and/or KUR$_a$

A few other Uruk IV texts that are somewhat more complex than the receipts above include similar uses of SAL and/or KUR$_a$ (fig. 5.9). The most important of these is W 9827 (fig. 5.9 b) which represents the largest counted group of unnamed SAL.KUR$_a$, recording at least 211 individuals. The remainder of these accounts include more modest numbers of individuals. Fragment W 20719,1 (fig. 5.9c) clearly contrasts a count of 23 [+...] KUR$_a$ and 19 SAL. These few Uruk IV texts along with the receipts described above out-number the Uruk III texts that provide evidence of KUR$_a$ and SAL as contrasting gender signs.

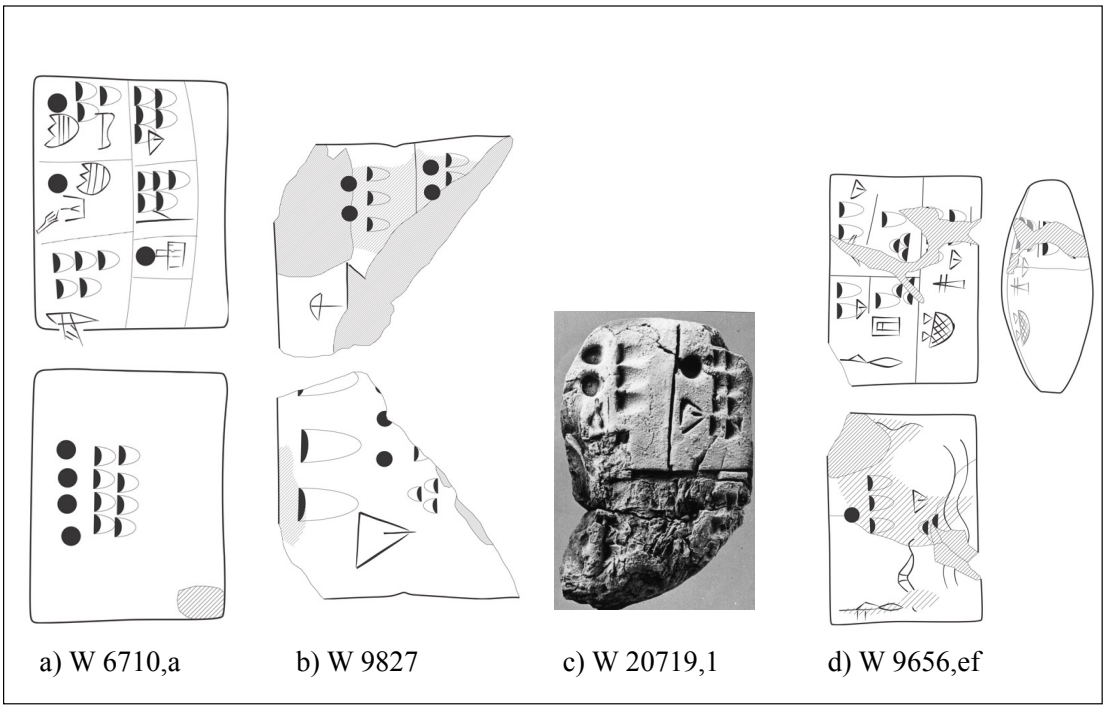


Figure 5.9: Some Uruk IV accounts that include counted KUR$_a$ and/or SAL

Uruk IV Tags

A few Uruk IV documents of unknown origin are described as 'tags' (Englund 1998: 57–60; Sarzyńksa 1997:184–98), because they are pierced and thought to have been attached to goods. One tag includes two signs that may relate to milling and threshing, or literally to the tools they may depict, GUM$_a$ (a mortar and pestle) and GURUŠ (a threshing sledge).

Uruk III counts of named KUR$_a$, SAL, and/or SAL.KUR$_a$

A very few Uruk III script phase accounts involving KUR$_a$ and SAL may be records of humans with accompanying naming cases (Englund 2009: 11). In the most important of these accounts (W 23999,1 fig. 5.11), used to define the genre of the 'slave trade texts', the number of KUR$_a$ and SAL corresponds to the number of sub-

cases with further designations, leading Englund to suggest that these could represent the personal names of recorded humans. Only around fifteen Uruk III period texts from Uruk record SAL and KUR_a or $SAL.KUR_a$, as well as a few texts from Jemdet Nasr. The majority of these texts include designations for 'children' as well, and belong to the 'scheme 1' texts discussed in chapter 8a. The only three texts that might record SAL and KUR_a adults alone are presented in figure 5.11 (noting, however their fragmentary state). While no texts appear to record KUR_a-humans alone (chapter 6a), SAL is used in a large variety of other contexts that might include counted humans (chapter 7a).

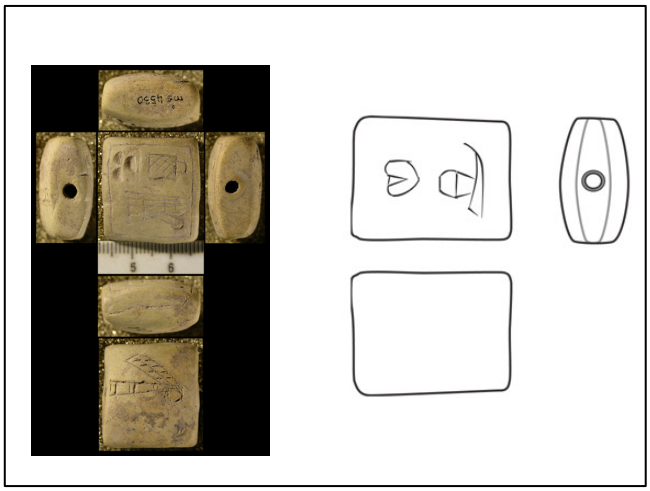
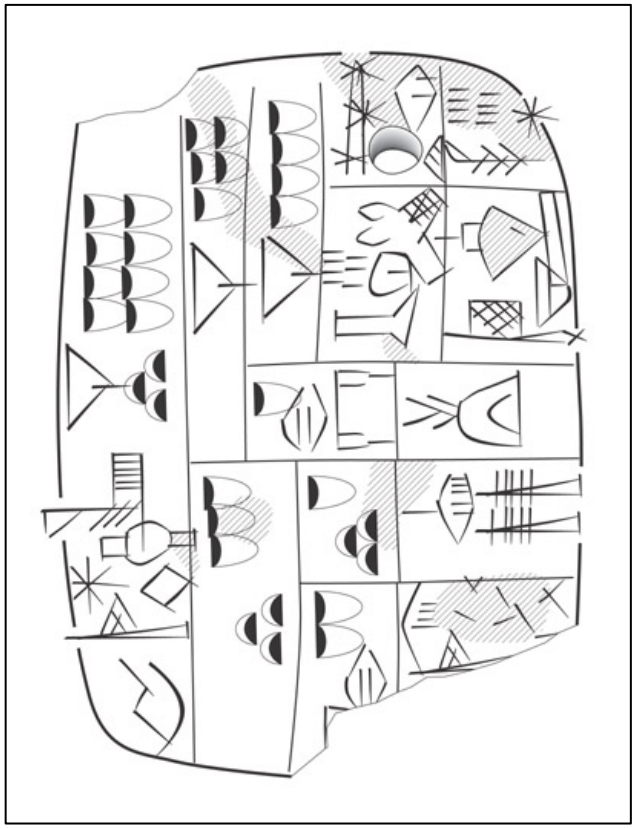
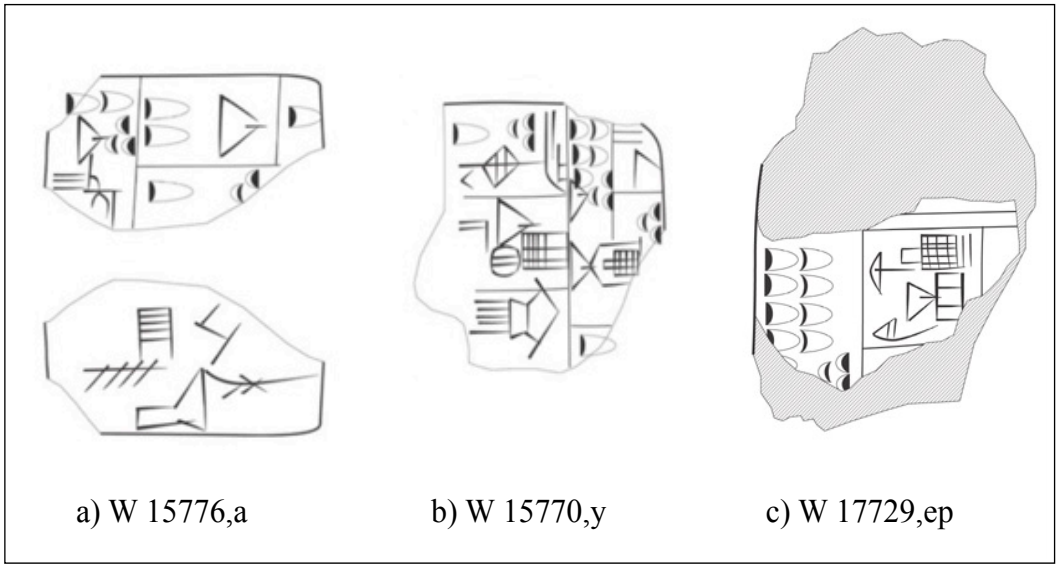


Figure 5.10: Two Uruk IV 'tags', MS 4530 / P006316 (left) and W 9579,by2 (right). W 5979, by2.





a) W 15776,a b) W 15770,y c) W 17729,ep

Figure 5.11 Above: Uruk text W 23999,1 provides the most complete evidence for gender and age designations as part of proto-cuneiform slave-trade bookkeeping. Below: the only three known accounts of the Uruk III period that clearly contrast KUR_a and SAL which might record adults only (the remainder include children).

Jemdet Nasr accounts of SAG x MA and ERIM$_a$

Three of the most important accounts recording SAL, KUR$_a$, and SAL.KUR$_a$ are from Jemdet Nasr and apparently record these individuals as 'captives' based on the text summaries with the designation SAG x MA and ERIM$_a$ (MSVO 1, 212–14, fig. 5.12). The set consists of two primary and one compiled register (Nissen et al. 1993: 72–5). A similar but simpler account, MSVO 1, 217, also lists named SAL.KUR$_a$ SAG x MA, but with no system of sub-cases. The three complex related texts were used by Nissen et al. (1993) to illustrate the development of 'bookkeeping on labour', and Englund (1999:46) categorises the individuals in this text as 'dependent labourers, probably slaves taken as plunder in violent actions against Babylonian neighbours'. Captive-taking as a source of certain categories of labourers is well-known from later third millennium parallels (Gelb 1973; Heimpel 2009; Cooper 2010). The gender identities of individuals in these texts are not always clear (SAL, SAL.KUR$_a$, KUR$_a$ and otherwise unmarked individuals all seem to appear in the compilation account), however, the majority of individuals appear to be SAL and SAL.KUR$_a$ women (see pages 279 ff.), which is also in keeping with traditional interpretations of the prevalence of female captive-taking in the early ancient Near East.

These accounts provide the most visually explicit evidence that SAL.KUR$_a$ (though not all SAL, see chapter 7a) could have been of a 'slave' class via their origin as foreign captives. That is, the use of the sign SAG x MA suggests that the individuals in this text were captives, since the sign appears to depict a human head with a rope across the neck[62]. Scenes of prisoners being marched with ropes around their necks

[62] This rope, the sign ZATU 336 (MA, PEŠ$_3$) turned in the combination SAG x MA from its normal orientation, is in other cases in proto-cuneiform used to indicate strings of fruit, and in later cuneiform has the meaning 'fig' (Sum. peš$_3$ / Akk. *tittu*).

are known from Uruk period cylinder seals as well as Early Dynastic and Akkadian period art. A parallel with the SAG + MA accounts may be drawn with the unprovenanced text (discussed below page 122) that Steinkeller attributes to a Kish tradition, which uses the sign combination LU_2 + $EŠ_2$, pictographically representing 'person + rope', in this case using the sign that comes to be used more generally for 'rope' in the third millennium (Akk. *eblu*)[63].

The Jemdet Nasr texts appear to summarise SAL, SAL.KUR_a, KUR_a, and TUR all under the label SAL.KUR_a. The summary line in text 212 further categorises seventeen of the SAL.KUR_a as SAG x MA while the remainder are $ERIM_a$ (page 102). The label $ERIM_a$ here may suggest, following later cuneiform use of the sign, that these SAL.KUR_a individuals were assigned to 'work groups', thus providing a possible link between the gender and age categories and labour organization.

The sign combination SAG x MA is rare. It is known so far only in these four Jemdet Nasr accounts (MSVO 1, 212–214 and 217), one Uruk fragment (W 21733,8), and a problematic unprovenanced text (MS 2727) (see also Bartash 2016: 13–14). The combination SAG x MA is not used in later cuneiform, but SAG is used as a sign for 'head' of slaves. In Ur III texts, SAG UŠ ('male head(s)') and SAG SAL ('female head(s)') denoted 'people who had not yet been sold or were in the process of being purchased' (Zsolnay and Westenholz 2016/ Steinkeller 1989).

[63] The sign $EŠ_2$ (or $ŠE_3$) = ZATU 516, although Green and Nissen (1987: 332) question whether ZATU 756 (a more curvy depiction of a rope?) may have been $EŠ_2$, 'with eventual coalescence with $ŠE_3$?'

MSVO 1, 212–214 provide counts of humans in the sexagesimal system, and display the format in which individuals (KUR_a, SAL, $SAL.KUR_a$, or TUR) are recorded along with sub-cases, a feature that Englund (2009, 2011) explained as records of personal names, known from other proto-cuneiform texts. However, in this text there are sometimes multiple sub-cases for a single N_1 individual; it may be that only the final visual level of these subcases record personal names (Nissen et al. 1993:70 ff.). This is unlike the other texts with 'naming subcases', which always match the numerical notation counting individuals to the number of subcases supposedly 'naming' those individuals. In the instances where two subcases are included for a single (N_1 / N_2) individual, the subcases may be read to provide different types of information on the individual, such as origin, household attachment or assignment, and perhaps personal name. In one unusual case, the first set of subcases for an individual of the category SAG x MA KUR_a clearly count *products*, with 10 sheep and one 'mountain equid' (KIŠ KUR_a). Are these additional 'booty' brought in with a captive individual?

Individuals can be counted with either N_1 or N_2 in these texts, the latter an N_1 with a 'stroke' through it. In later cuneiform, the sign BAD ($uš_2$/ug_7) is used to refer to dead humans or sacrificed animals, and N_2 may be the precursor to this sign. In proto-cuneiform, a safer interpretation for N_2 is that it marks out individuals for some unknown purpose (Hawkins 2015: 5). The use of NIMGIR in the summary line of MSVO 1, 214 (and in MSVO 1, 217) may suggest comparison to lists of workers of the Fara period headed by niĝir, or 'heralds'—perhaps individuals responsible for 'calling up' workers in a tradition preserved over several hundred years across Southern Mesopotamia (Bartash 2016: 13; Visicato 1995: 91–101).

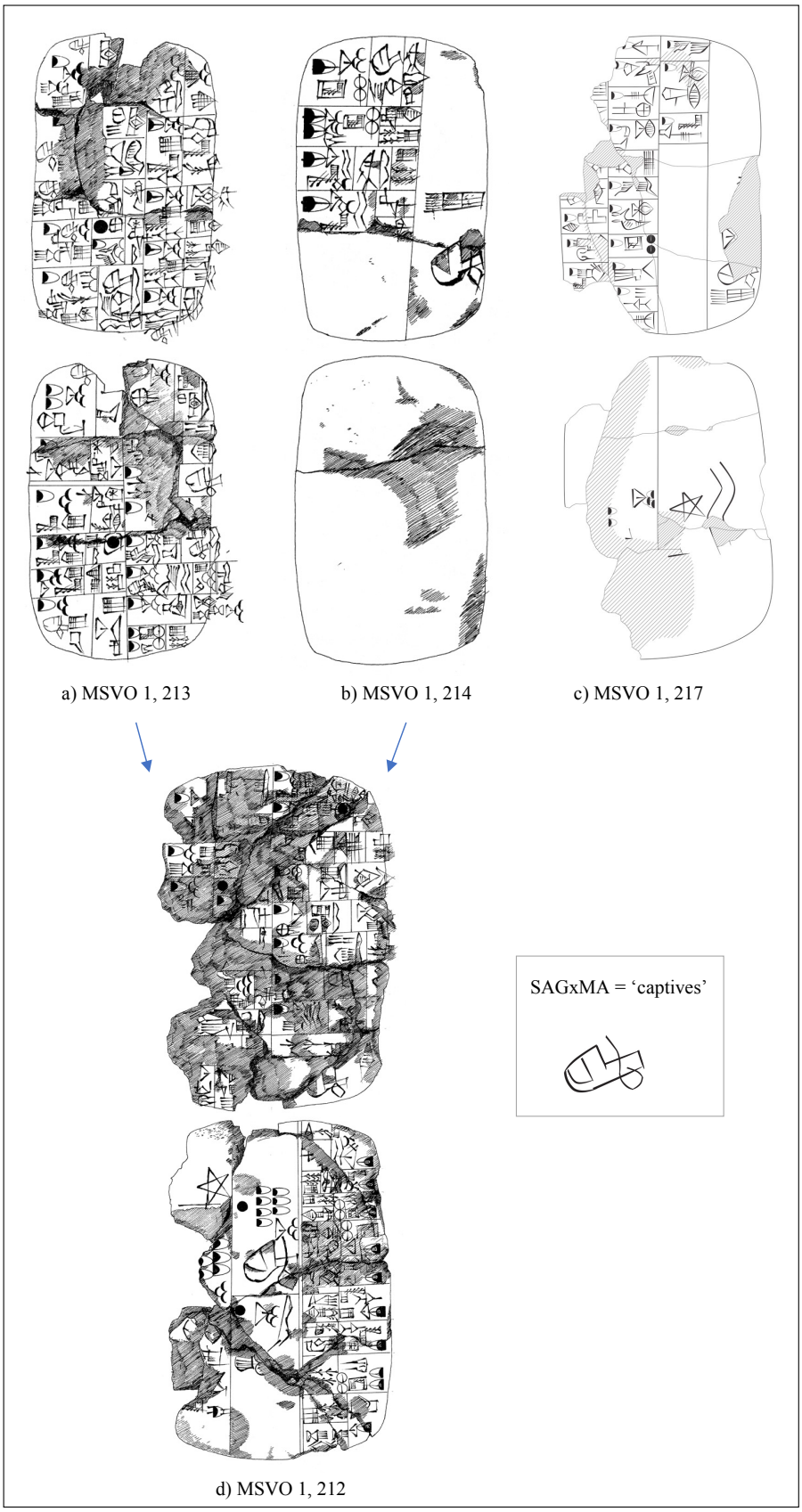


Figure 5.12: The information from Jemdet Nasr accounts MSVO 1, 213–214 was compiled into MSVO 1, 212. The texts record around two dozen captive women (SAL and SAL.KUR$_a$) and men (KUR$_a$), along with a few children (TUR). MSVO 1, 217 is a separate account of similar but less complex structure.

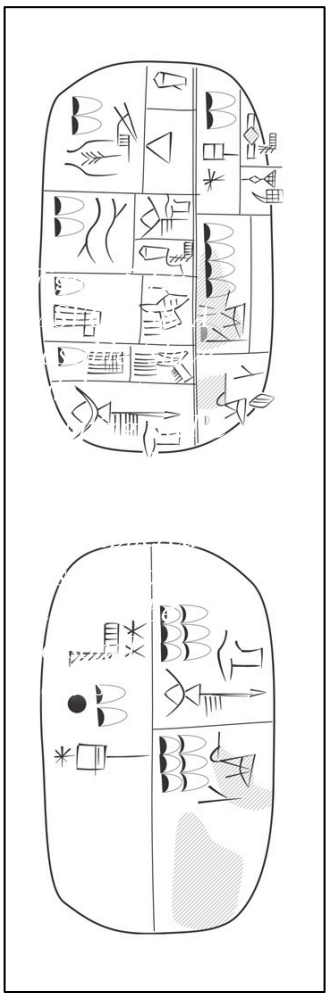
Despite a detailed understanding of the order in which entries from MSVO 1, 213 and 214 were transferred onto 212 (Nissen et al. 1993: 70 ff.), there is much about the text that is not yet understood, and the texts should be subject to further detailed study (space prohibits this here).

An unprovenanced prisoner's plaque

A 'prisoner plaque' from a private collection (P453401), published by Steinkeller (2013a) may present the earliest known textual evidence for captives of war being assigned as workers in gardens. The plaque, which Steinkeller suggests may come from Kish or its vicinity and date to ED II (2750–2600) or even the beginning of the Early Dynastic period (2900–2750), records groups of prisoners (indicated with the designation šag) from various places. Four of these entries are followed by a case with PN giš.kiri$_6$ gišimmar, which Steinkeller suggests may indicate that the captives were sent to work in the date-palm orchards belonging to the named individual (2013a: 132). The number of unnamed captives in this text is very large, at 36,000.

Sale of slaves?

The sign ŠAM$_2$ may indicate, as in later cuneiform, the verb 'to buy/sell', and it used in a context that may suggests the sale of slaves in proto-cuneiform. Unprovenanced text MSVO 4, 58 was interpretted by Woods (2015: 80) as a record of twelve slaves bought or sold by administrators for agricultural work—he reads the colophon ŠAM$_2$ APIN$_a$ as 'sold to the agriculturalists', interpreting APIN$_a$ with its later Sumerian value engar (see also Friberg 1979: 17–23; Englund 1996 no. 58). The first six



counted individuals are either associated with the city Adab, or perhaps with the individual identified as ŠUBUR ADAB. The number of subcases in the text match the numerical entry, following Englund's 'naming case' pattern, and it can be noted that some designations in the subcases (ZATU 659 and BU_a+DU_{6a} GUL) match those found in the EN.TUR text MS 3035. Several features of this text require future attention, for example the role of the individual (?) AN MAR_a in both obv.1a and rev. 2, and whether or not $ŠAM_2$ $APIN_a$ indeed provides the context for the whole account.

Figure 5.13: MSVO 4,58. A possible 'slave sale' text, counting twelve individuals listed by undeciphered designations that may be personal names.

Rationing and redistribution in proto-cuneiform

Distribution of capacity measures of grain, in the systems ŠE, ŠE", and ŠE' (Damerow and Englund 1987: 136–42), as well as breads and ales counted in the bisexagesimal system (used for 'rationed' consumables, Englund 1994: 20) are among the most common accounting contexts in proto-cuneiform. Englund (1998: 204–5; Paulette 2016:88) cites one text recording 550 tons of emmer wheat, which could support as many as 3,000 individuals for a year. Such texts may provide a general sense of the scale at which the proto-cuneiform administration was operating.

Grain storage and redistribution was an important part of the development of early Mesopotamian state power (most recently, Paulette 2015, 2016). I. J. Gelb recognized the pan-mesopotamian rationing practices he describes in his article 'The Ancient Mesopotamian Rationing System' (1965) from texts as early as the Fara period. These systems involved grain capacities, as well as less regular garment/cloth and oil distributions. Earlier manifestations of a similar rationing system[64], in the Uruk IV–III period texts, have subsequently been elaborated through members of the project *Archaische Texte aus Uruk*, built largely upon a mathematical analysis of the proto-cuneiform numerical systems (Friberg 1978/79), and aided by comparison with later third millennium administrative texts (Nissen et al. 1993). Redistribution of grain in these texts is ubiquitous, although it is rarely manifested in similar types of worker-and-ration lists that appear in the later third millennium. A variety of other products also appear to be distributed in proto-cuneiform accounts, but for simplicity this section focuses on the evidence of grain rations as a fundamental aspect of supporting household personnel.

From compiling evidence of hundreds of rations texts of the second half of the third millennium in Mesopotamia, Gelb quoted an 'average' distribution of 60 $sila_3$ for men and 30 for women. A similar 'typical' ration size has been suggested for proto-cuneiform as $1N_1$ per month which, by estimate of $1N_1 = 1$ later $sila_3$ (e.g. Englund 1998:126), would be equivalent to the standard level of *women*'s rations in later

[64] Despite conflicting opinions about the use of the term 'rations', it is retained here for ease of discussion. Sallaberger and Pruß (2015: 79–80) prefer the terms 'allotment, portion or share' to either 'rations' (the latter which may have a negative connotation) or 'wages' or 'salary' in the context of their study on third millennium rationing especially at Tell Beydar, they argue 'since all members of the communal organization, whether sick, small children or old people, received their share'. Likewise, they prefers the term 'worker lists' to 'ration lists'.

cuneiform. As in later cuneiform, in practice, grain distribution levels varied, probably depending upon one's role in the administration as well as sex and age.

The most important piece of evidence for N_1 as a standard (or idealized?) amount of grain for a low class worker for a month is provided by fragment MSVO 4, 27. This text combines time notations, the symbol NINDA/GAR (a beveled-rim bowl), and measures of grain in the ŠE system. The fragment records NINDA/GAR (probably indicating archaic grain distributions), next to '24 months' (=720 days, Englund 1988), the sign ŠE (barley) and the capacity measure equivalent to 720 N_{30a}, or 720 'daily grain amounts'. That is, 720 of the sign NINDA/GAR are filled with $1N_{30a}$ each, and $1N_{30a}$ has by this and other evidence been assigned a value in the range of .8–1 litre, the approximate volume of beveled-rim bowls. Other evidence for a $1N_1$ per 1 month correlation comes from the very bundling principles of the ŠE system, which appear to have been designed in association with the calendrical divisions. An administrative month of 30 days ($1N_1$ worth of grain) could be divded into 5 'weeks' (1 week = $1N_{39b}$) of 6 days (1 day = $1N_{30a}$) each. That is: 6 N_{30a} = 1 N_{39b} and 5 N_{39b} = $1N_1$ (see fig. 5.30).

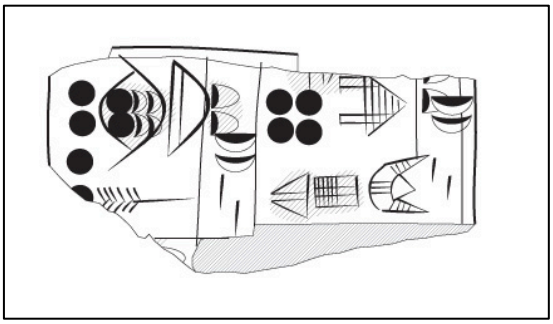


Figure 5.14: MSVO 4, 27

Despite the evidence that scribes were performing calculations based upon a 'standard' rationing level, the studies of Friberg highlighted that varying rates of grain distribution are attested in proto-cuneiform (Friberg 1999: 9–20). Rates in the texts themselves are hypothesized to be expressed in 'monthly' amounts, similarly to

typical later rations texts, ranging from Sargonic to the Ur III periods (Gelb 1965: 233). The below figure is compiled from the analysis by Friberg (1999), with an approximation of $1N_{30a}$ = 1 later Sumerian $sila_3$ = .8 modern litres. This demonstrates quite varied levels of grain distributions, most of which are much larger than the proposed 'low standard' of $1N_1$=c. 25 litres/month.

Text	type of text	rate per month	estimated modern equivalent
MSVO 4,66	calculation	$1N_1$ $2N_{39b}$ $2N_{28}$[65]	36 litres *average bread+ale
MSVO 4, 60	distribution	$1N_1$, *worker*	25 litres
		$2N_1$, *worker*	48 litres
		$3N_1$, *worker*	72 litres
		$1N_{14}$, *overseer*	144 litres
		$2N_{14}$, *overseer*	288 litres
MSVO 4, 65	distribution	$1N_{14}$, *overseer*	144 litres of emmer
		$2N_{14}$, *overseer*	288 litres of emmer
		$1N_1$, *worker*	25 litres
		$2N_1$, *worker*	48 litres
		$3N_{39b}$, *worker*	14.4 litres
		$2N_{39b}$, *worker*	9.6 litres
MSVO 4, 27	calculation	$1N_1$, *worker*	25 litres

Figure 5.15: Modern estimates (right column) of monthly rationing levels in scribal calculation and grain distribution texts studied by Friberg 1999.

[65] reconstructed from the rate $1N_{28}$ daily (Friberg 1999:11)

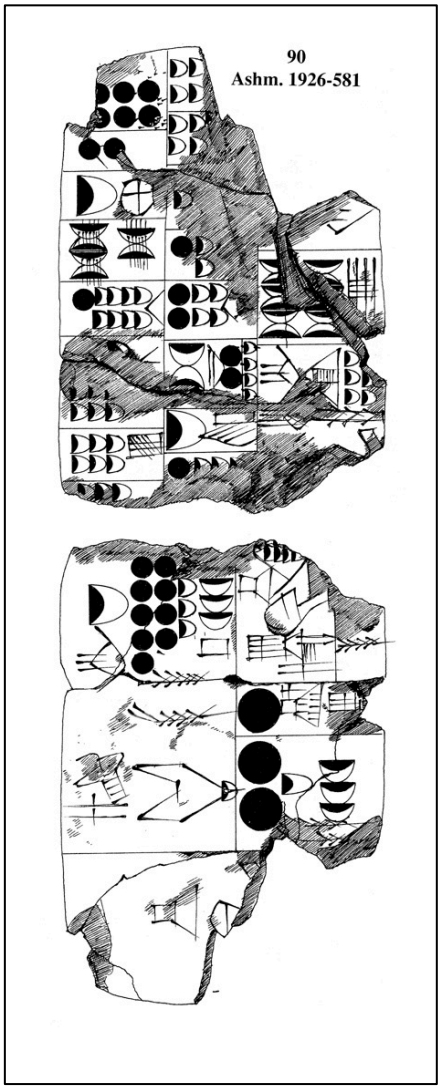


Figure 5.16: MSVO 1, 90, calculations for three year's worth of grain distributions.

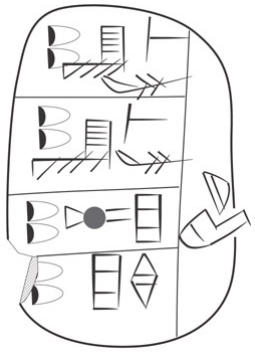
Steinkeller (2015: 16–17) suggests that corvée labour was already practiced in the Late Uruk period, perhaps drawing workers from different cities forming a 'loose political alliance of a cooperative nature' in order to build the major structures in the Eanna precinct. He traces the ultimate origin of Mesoptoamian corvée labour to the emergence of cooperative irrigation works in the Ubaid period[66]. Unfortunately, remuneration for such building projects has so far not been visible in the proto-cuneiform texts. Some possible 'production' contexts discussed in this dissertation are animal husbandry, textile work, and agricultural work.

It is normally assumed that the texts from Uruk reflect temple-household economies, and many of the ration-recievers may be described as 'temple personnel' of varying statuses. Texts MSVO 1, 89 and 90 (fig. 5.16) from Jemdet Nasr may be 3-year accounts involving daily grain distributions of between 2.5–5 litres, which Englund suggests may reflect offerings provided to sustain cult personnel (1988: 138; 2011: 40)[67].

[66] The practice of redistribution of grain in Mesopotamia may ultimately have derived from that of 'pooling' in chiefdoms and transformed along with local developments in political economy (Hudson 2015: 650 ff.).

[67] By parallel, in ancient Egypt, Ezzamel (2012) notes the origin of the rationing system (the 'crew system'), in restributive practices associated with, 'initiation ceremonies and protective divinities' and

Texts including the sign GU_7, usually in the text summary, have been understood to represent grain and other ration distributions (see page 104). Some GU_7 texts name high officials, and may reflect redistribution among members of society holding important offices. W 15897, c08 records GU_7 of $2N_1$ of an unspecified product each for officials known from the NAMEŠDA (LU_2 A) list. Although the officials are from quite different positions in the list (fig. 5.11) which may be arranged hierarchically (Nissen 1986: 329), in this text all receive the same amount of allotment of 60 N_{30a}[68] (the 'standard ration' of MSVO 4, 27)—a modest distribution for the NAMEŠDA, a title later equated in lexical tradition with Akkadian *šarrum*.



Column 1	Position in the composite LU_2 list
$2N_1$, ENGIZ	LU_2 63
$2N_1$, ENGIZ	-
$2N_1$, NAMEŠDA	LU_2 1
$2N_1$, NAM_2 DI	LU_2 3
Column 2	
GU_7	

W 15897,c08

Figure 5.17: A GU_7 rationing text providing grain distributions of about 60 litres to each of five high officials, whose titles are known from the lexical list LU_2

Small capacity measures in association with named workers or slaves (SAL, $SAL.KUR_a$, $ERIM_a$) are very rare. This contrasts with both proto-Elamite evidence and later cuneiform rationing traditions. This feature of proto-cuneiform was commented upon already by Nissen et al. (1993: 71), who suggest that 'the rations

'thereafter used in mortuary cults and as a means of organizing temple priesthood (Eyre 1987; Roth 1991) before being adapted for use in the Palace and other administrative domains in the Old Kingdom' (2012: 274).

[68] The numerical system is assumed to be ŠE through the use of GU_7 in the colophon, but this can't be proven beyond doubt through the numerical signs used.

generally were not distributed to the labourers nor the foremen directly, but rather came first into the hands of high-ranking officials, each of whom was responsible for the welfare of a group of labourers, from a certain field of activity'.

The proto-cuneiform scribes may therefore have mostly relegated the organization of specific labour projects and production contexts to middle-men, sometimes identified by the titles known from the list of officials and LU_2 A, or other undeciphered personal names. In only a few cases, grain distributions may be recorded in direct correlation with lower-class SAL workers (chapter 7a). On the other hand, some of the scribal calculations described below suggest that the proto-cuneiform scribes *were* tightly controlling the distribution of products based on expected production rates. One might suggest that the use of an extensive, multi-tiered range of officials who were charged with large amounts of grain and other products from a household may have provided some stimulus for the development of these resource and labour calculations.

In addition, some larger distributions, including grain but also other products, may reflect what Johnson has described as 'elite' redistributive behaviour and may not be directly related to daily provisioning of low-level dependents or remuneration for labour. Ample ethnographic and archaeological examples are available that highlight the social significance of feasting or ceremonial redistribution of food surplus in maintaining the social order (literature in Hastorf 2017).

Wages for hired workers?

In contrast to GU_7 rationing texts, Friberg (1999) understands text MSVO 1,26 as an account of 'wages for hired workers', which he argues is represented by the proto-cuneiform sign combination ($NINDA_2$ x ZATU 659 x $1N_1$). This contrasts with the opinion of Gelb (1965: 230 ff.) that it is not suitable to discuss 'wages' before the introduction of lu_2- ḫun-ga 'hired workers' in the Ur III period. The account summary of this text, AB_a NI_a.RU, relates to a major city household of Jemdet Nasr. Based upon consideration of the numerical notations, Friberg suggests that it records three officials, in charge of 10 workers each, and one official in charge of 5—with resulting grain disbursements such that each official received an additional '1/10 of the wages of each hired worker under his command' (1999: 120). The scribe's knowledge of the number of 'workers' in the context which the text is recording are, according to Friberg's interpretation, *implicitly understood* from the capacity measures associated with the officials; that is, ideographic signs for 'workers' do not appear in this text, since it explicitly records only official's names (or other designations?)[69] and grain amounts associated with each.

Friberg's methodology requires comment. He arrived at his conclusion through recognizing first that the 'almost round number' capacity measures in cases 1–3 and case 4 could be evenly represented by units of larger numerical notations (N_{45}, and $5N_{14}$ respectively) accompanied by an additional 1/10 extra of that measure ($1N_{14}$ is 1/10 of $1N_{45}$ and $3N_1$ is 1/10 of $5N_{14}$, see fig. 4.1). From there, he worked backwards

[69] The first case of the text, the (broken) 'official' title includes the signs ŠE and $3N_{57}$.SAL (the latter probably a variant writing of $SAL.KUR_a$), which could either be interpreted as a part of an official or personal name—or perhaps as an indication of the context for the text, in a similar manner to the 'header' information of proto-Elamite texts.

noting that *if* the account were for one month (30 days), and *if* N_{45} represented the amount of barley divided between a number of workers, then 10 workers would receive $1N_{14}$ each per month, plus an eleventh person would receive an amount equal to 10% of each of these worker's salaries (explaining the 1/10 of the total extra); this works out to a 'daily' rate of $1N_{39b}$, a large distribution amount (six times the low standard calculation of $1N_{30a}$ demonstrated in MSVO 4, 27), but one possibly observable in other proto-cuneiform texts. Therefore he proceeded to interpret $NINDA_2$ x ZATU 659 x $1N_1$ with 'hired labour' through association with later cuneiform $NINDA_2$ / Sumerian $šam_2$ /sam_x 'Purchase price' (Krecher 1980: 495; Thomsen 1984: 313)

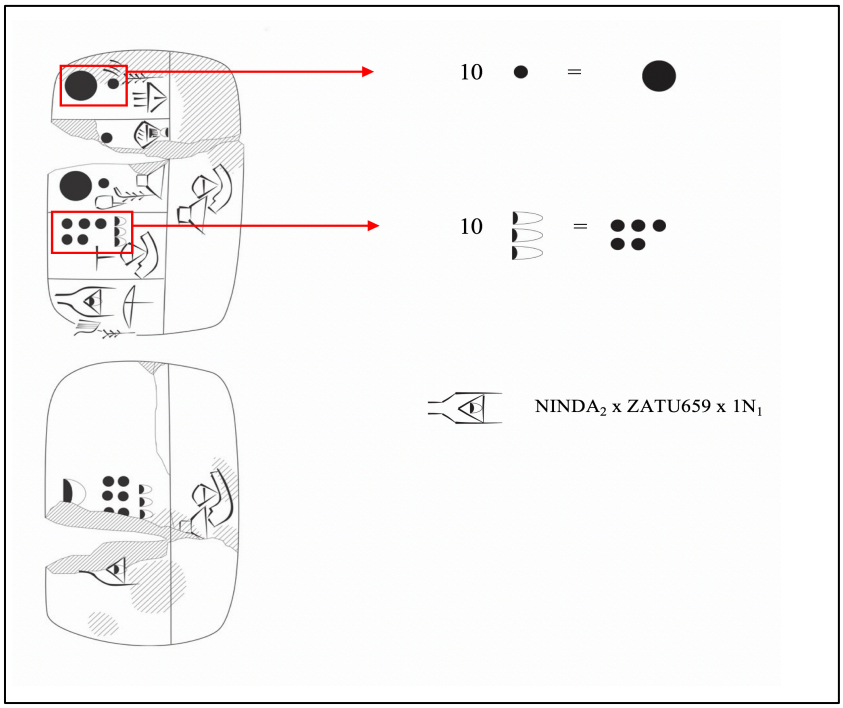


Figure 5.18: MSVO 1, 26 possible 'hired labour' text from Jemdet Nasr. Friberg (1999) posits three teams of ten and one team of five hired workers led by individuals named or given titles (e.g. the ME-official of NI_a.RU). See Johnson 2015:176 with reference to ME_a as the designation of an office in Early Dynastic, and perhaps Uruk III texts.

Bread and ale calculations

Text MSVO 4, 66 (fig. 5.19) may highlight the extent to which scribes were attempting to micro-manage the feeding of personnel for long periods of time through *calculations*—if not detailed low-level rationing lists. The interpretation here depends partially on Friberg (1999) but a different conclusion is reached about the time-frame and number of personnel involved. The analysis here highlights how an 'overseer'/ 'worker' paradigm may not always be the best interpretation for observed variations in grain distribution levels.

Friberg (1999; 2004: 65) has interpreted this as a 'bread-and-ale' text, a hypothetical administrative puzzle set for a scribe. Finding 'round and almost-round numbers' in the total grain expenditure of bread and ale, he suggested that the total amount of grain had been the starting point for a complex problem of distributing it in the best way possible on bread and ale for a set number of individuals, while maintaining a stable ratio between grain expenditure on bread versus ale (1999: 7–8). The text uses five different numerical systems (3 main and two derived). It counts numbers of six types of bread (by size) in the bisexagesimal system, and jars of ale (by quality?) in the sexagesimal system, alongside the amount of grain required to make each of those products, in capacity system measures.

Friberg noted that there were altogether 7,200 discrete loaves of bread (of varying sizes) counted, and used this to conclude that the text is 'an account of rations of various sizes of bread (and ale) for 20 persons for one whole year of 12 x 30 days' (1999: 7). That is, he reasoned that 7,200 (the total number of breads) was evenly

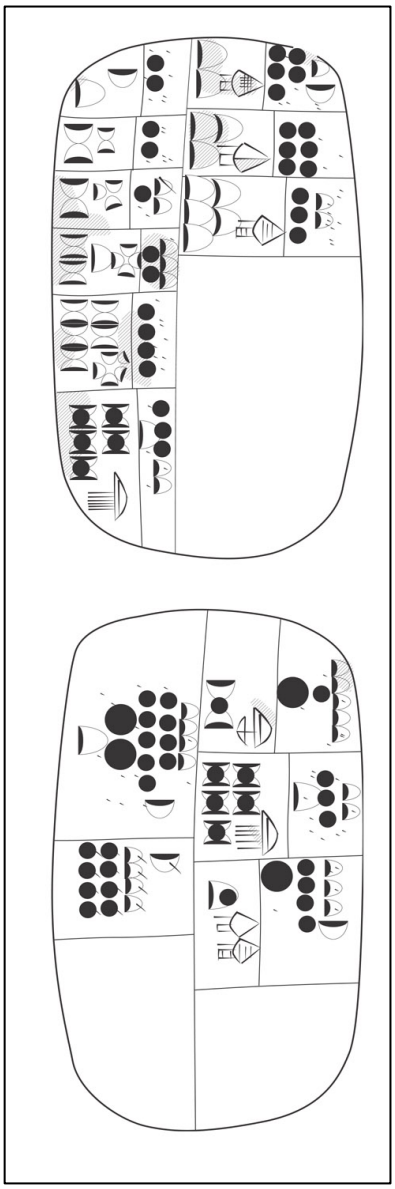


Figure 5.19: MSVO 4, 66

divisible by 360, the known number of days in an accounting year in proto-cuneiform (Englund 1988: 222). However, he also hypothesised that the smaller ration sizes (the first group of 6,000 counted breads made of .8 litres of grain each) were for 'ordinary workers' while the larger sizes were for overseers or other more important individuals. That is difficult to integrate with his own observation of the possible indication for 7,200 breads for 20 workers for a year. The 6,000 breads of .8 litre (the typical 'daily ration'/beveled-rim bowl size) could not have been shared evenly by a set number of 'ordinary' workers for precisely a year, since 6,000 isn't evenly divisible by 360 —although it *could* represent breads for 20 men for precisely *10 months*, with the remaining breads distributed to those men for the remaining two months being of different sizes, following the scheme in figure 5.20.

This is only a hypothesis and the number of personnel and the time frame of the scribe's hypothetical scenario could be adjusted in different ways, and must also incorporate division of the 600 jars of ale; however, it outlines how something like a 'cultic calendar' may provide a more suitable explanation for the social context underlying the scribal calculations than an 'overseer-worker' explanation. This text provides a key example of the importance of attention to the numerical information in

texts, and at the same time the need for an updated interpretative framework that considers the economic and social significance of ancient redistributive practices.

Approximate size of bread	total # breads	# breads *per person/per year?**
4.8 litres**	60	3
2.4 litres	120	6
1.6 litres	120	6
1.2 litres	300	15
.96 litres	600	30
.8 litres	6,000	300

*Following the hypothesis of Friberg (1999) that MSVO 4, 66 calculates one year's 'daily breads' for 20 personnel, but assuming even distribution sizes to each of the personnel.

**assuming $1N_{30a}$ = .8 litres

Type of ale	# of jars	grain used overall	grain used per jar **unexpressed in text*
DUG_{ax} U_{2a}	120	c. 770 litres	c. 6.4 litres
DUG_{ax} $1N_{57}$	180	c. 864 litres	c. 4.8 litres
KAŠ	300	c. 480 litres	c. 1.6 litres

Figure 5.20 : Bread and ale calculations in MSVO 4, 66 (fig. 5.19).

Other textual evidence for labour organization

Animal husbandry

As with proto-Elamite, a large number of proto-cuneiform texts record animals and animal products, indicating that the administrative control of scribes extended to some degree over the work of shepherds, as well as workers involved in processing animal products. Green identified fourty-eight similar livestock accounts from Uruk (thirty-four from a single locus), that count animals by their species, sex, and age. These often include indication of personnel responsible for the animals, with two common

designations being PA NAM_2 RAD and GAL $SILA_4$. The scribes were interested in tracking products from the animals: Englund (1995: 44) describes evidence for 'yearly deliveries' of 'two to four liters of dairy fat per milk cow'.

Textile work

Crawford (1973) understood textiles to be one of the most important of what she termed the 'invisible exports' of Mesopotamia. Many authors assert that wool and textiles were essential to the development of longer-distance exchange for materials not native to Southern Mesopotamia, and to the concurrent changes in Southern Mesopotamian society and economy through the growth of a textile industry (Adams 1981: 11; Algaze 2008: 94; R. P. Wright 2013: 395). While use of some sheep's wool is evidenced already at noelithic Çatalhöyük, the domestication of breeds of sheep particularly for their wool, and the emergence of a 'wool economy' (Bréniquet and Michel 2014) in Mesopotamia has been situated at the end of the fourth/beginning of the third millennium BC, and has been associated with the social and organizational changes taking place in the earliest cities (further to above, Zeder 1994; Bréniquet [in Bréniquet and Michel 2014] 62 fn. 53 for literature; Vila and Helmer same volume). This positions the changing economic circumstances precisely at the time that the proto-cuneiform accounting system developed, and suggests that the texts may well have been involved in regulating an emerging wool industry.

McCorriston (1997) proposed that there was a shift in emphasis from flax to wool production around the end of the 4th millennium BCE, and that the dynamics of the new wool industry included a re-positioning of gender roles as women became increasingly employed in textile production. That is, judging by later third millennium

cuneiform records in which large numbers of women were employed in some weaving workshops, the emergence of this important textile industry in the late 4th millennium may have been the impetus for engaging growing numbers of female workers in textile workshops or other production schemes (also Algaze 2008: 73 ff.). Textual material from the later third millennium is often discussed side-by-side with Late Uruk and Jemdet Nasr period social developments. For example, R. P. Wright (1996: 92 fig. 3.2) illustrated her discussion of Ur III textile workshops with a late Uruk period seal impression from Susa showing (bald, male?) workers at a loom.

A foundational study of textile production in third millennium Mesopotamia, focusing on gender and age in the workforce, is Maekawa's examination of texts from Lagash recording 'female weavers and their children' (1980b). He examined documents spanning from the pre-Sargonic through Ur III periods primarily from Girsu[70]. Following on others (Deimel 1931; Waetzoldt 1972, 1988), Maekawa highlighted the use of *predominantly female* labour in households employing sometimes upwards of 1,000 workers[71]. Characteristic textual evidence for these workshops includes the pre-Sargonic še-ba geme$_2$-dumu texts (Deimel 1929), recording rations for women together with their children. Maekawa noted that for the Lagash corpora, there was a terminology shift from pre-Sargonic ki-siki(-ka) or geme$_2$-ki-siki-(ka) for female weavers to Sargonic and later geme$_2$-uš-bar.

Textile production has been extensively studied in recent years, and its importance for early Mesopotamian economies is undisputed (Durand 2009; Michel and Nosch [eds]

[70] The Ur III material is also summarised in R.P. Wright 1996, 85 ff.
[71] Grégoire 1999 for overview of the number of employees in some of these households, in the hundreds to thousands.

2010; Nosch et al. [eds] 2013; R. P. Wright 2013; Bréniquet and Michel [eds] 2014). It has been shown to be strongly correlated with female textile workers (e.g. Maekawa 1980b; Uchitel 2002), although the work was not exclusively done by women, and assumptions on gender may affect modern scholarly interpretation of the texts (Garcia-Ventura 2014). While Sarzyńska has produced a number of studies of textile production in the proto-cuneiform texts (1988; 1997: 168–83; 2002), the first two studies were focused heavily on comparisons between proto-cuneiform signs and 'tokens' for which there is little evidence to justify, and the latest continued to rely upon speculations about the meanings of signs rather than careful contextual analysis, with no attention to tablet format or accounting contexts[72]. Bréniquet (2016) has studied weaving (along with potting and churning) in the Late Uruk period from the perspective of glyptic, and Boehmer (1999: 29 ff.) discusses the depictions on Late Uruk cylinder seals of handled vessels with 'fringed textiles' emerging that could relate to interregional textile trade.

The presence of 'workshops' employing women (possibly often foreign slaves) already in the late Uruk period has therefore been posited based upon mid-late third millennium textual and glyptic evidence, including the interpretation of schematic seals that may reflect groups of women employed in textile production (see pages 69, fig. 3.1). However, identifying female weavers and textile workshops in proto-cuneiform texts has been problematic (page 301 ff.).

[72] For a summary of the state of knowledge of proto-cuneiform textile records, Englund 1998: 150–54. Charvát's studies (2014a; 2011) unfortunately also proved more speculative than methodical in their assessment of administrative terminology and the organization of production.

Wool and textile references are abundant in the Uruk texts (e.g. fig. 5.21), but the management of a textile production industry is not observable in the form of workers lists (these types of documents do not exist in proto-cuneiform in a recognizable form). Instead, indications that the proto-cuneiform scribes were involved in a thriving textile industry is offered first by 'herding' accounts of sheep and goats, and then by the inclusion of wool or textiles, sometimes along with other products, in often unclear, probably distributive contexts (Englund 1998: 152). The contexts of the product references have not yet been carefully studied— in the future wool and textile account types might be outlined, including the appearance of wool or textiles in mixed redistributive accounts (e.g. the 'dairy' account W 20274, 97, Englund 1998: 160 fig. 55) perhaps as the 'elite rationing' practices referenced by Johnson (2015 :193).

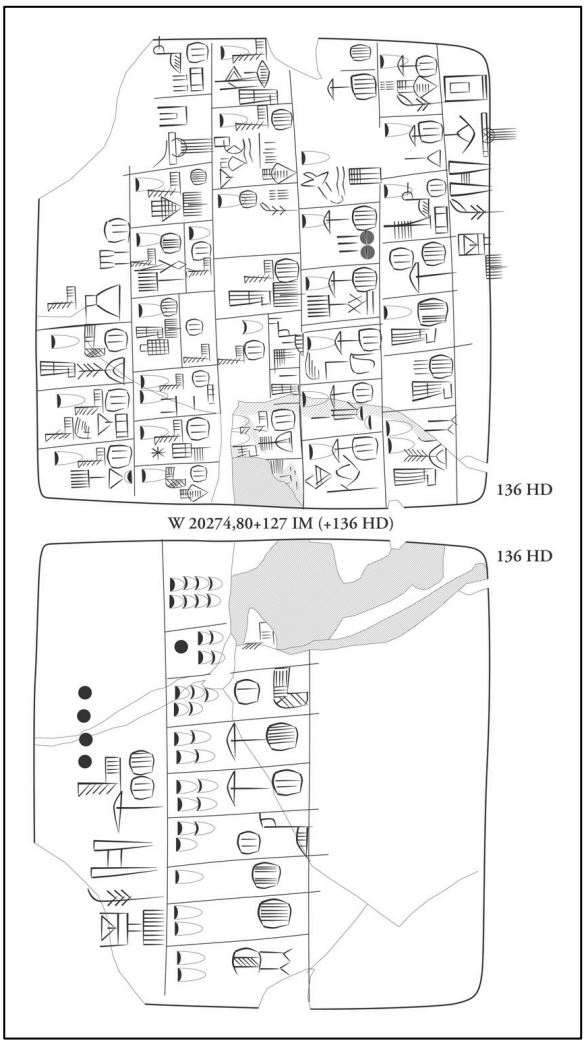


Figure 5.21: Complex account involving wool and textiles W 20274,80 + W 20274,127 + W 20274,136

The production of textiles involves far more than just weaving: Bréniquet (2008 and 2010) identifies at least eight major stages, ranging from fiber production to finishing—and each of these could be associated with different workers. Englund has suggested that 'there is no obvious bookkeeping chain between the sheep herds, the wool shearing, and the production of wool from fleece, or garment from wool' (Englund 1998: 152). That is, while distribution of wool and of textiles is evident in proto-cuneiform, the labourers and production are not. However Charvát (2014a) reads W 20274, 80 as showing the process of treatment of wool into textiles with the EN then distributing them as BA-rations. He offers possible interpretations of several texts by understanding certain signs (ZATU 752, ZATU 753, ZATU 214, ZATU 737 […] SAL) as representing either storage facilities or production spots, and suggesting that textiles were transported between these locations in jars (see pages 61–2).

Administration of a brewery

Powell (1994: 104–18) identified in the Pre-Sargonic archives of Girsu, 'temple accounts' relating to ale production. These were of two types—monthly disbursements of grain sent to brewers, and accounts of ale deliveries from breweries to the temple household. The second type of account lists both quantities and ingredients, as well as the amount and type of final product, displaying a careful watch over the movement of grain between temple storehouses and the production of certain professionals. This type of administrative control is already attested in the proto-cuneiform texts, as described by Nissen et al. (1993: 36 ff.) who identified eighteen proto-cuneiform documents relating to the activities of a brewer or brewery. In these texts, a person or household was indicated by the sign combination KU_{b1} $ŠIM_a$. The sign SANGA sometimes appears with KU_{b1} $ŠIM_a$ suggesting that either the individual named KU_{b1} $ŠIM_a$ was a sanga-administrator, or that the household called the KU_{b1} $ŠIM_a$ was headed by a sanga-adminsitrator. The texts show that this administrative unit or individual was responsible for large amounts of grain (over c. 135,000 modern litres in one text); texts indicate accounting periods and ingredient ratios of barley groats and malt (probably indicated by the derived numerical systems Š" and Š' respectively) while tracking the movement of grain between storehouses and individuals in the administration (Nissen et al. 1993: 36 ff.). Pages 296–9 discuss a text with possible reference to a group of female ale-producers.

Agricultural production

It is presumed that agricultural work constituted the most common labour in relation to the maintenance of early Mesopotamian urban centres (Englund 1998:181). The importance of agricultural labour to the proto-cuneiform households is observed primarily through records of redistributive behaviour involving capacity measures, counted breads or ale vessels. The clearest indications of the administration of agricultural planning and oversight of production in proto-cuneiform come from a small number of field-measure texts ('divisioning of land' texts, two 'grain-and-field texts' and a possible harvest yield text [Friberg 1991: 2]). Dozens of texts from Uruk use numerical notations in the GAN_2 system that represents areas of land (e.g. W 20214,1, fig. 5.23a) although the majority of these texts are unfortunately terse or fragmentary. Text W 20551,1 (fig. 5.23c) is an unclear account recording large areas of land and including some higher-status titles, including NIN. Friberg concluded, by comparing relatively constant seed-per-field-size rates known particularly in Ur III texts (Maekawa 1984:87), that proto-cuneiform text MSVO 1, 10 (fig. 5.22) recorded the seed needed to sow a standard-sized field (indicated by GAN_2) *plus* grain to feed draught animals (Friberg 1991: 10). A fragmentary text from Uruk may have been a harvest yield account for several fields producing emmer wheat (Friberg 1991: 10–12, W 19726,a, fig. 5.23d).

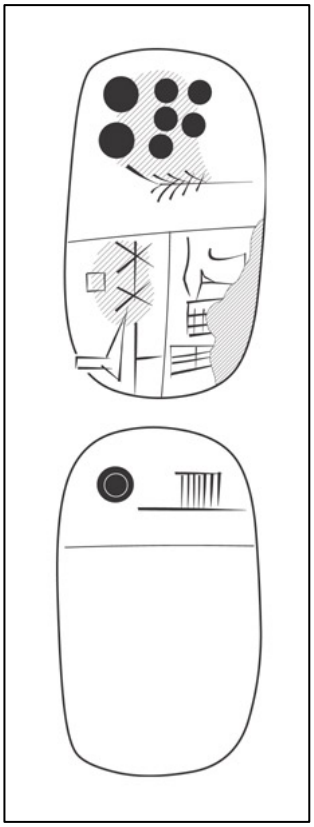


Figure 5.22: MSVO 1, 10, seed for fodder and plowing?

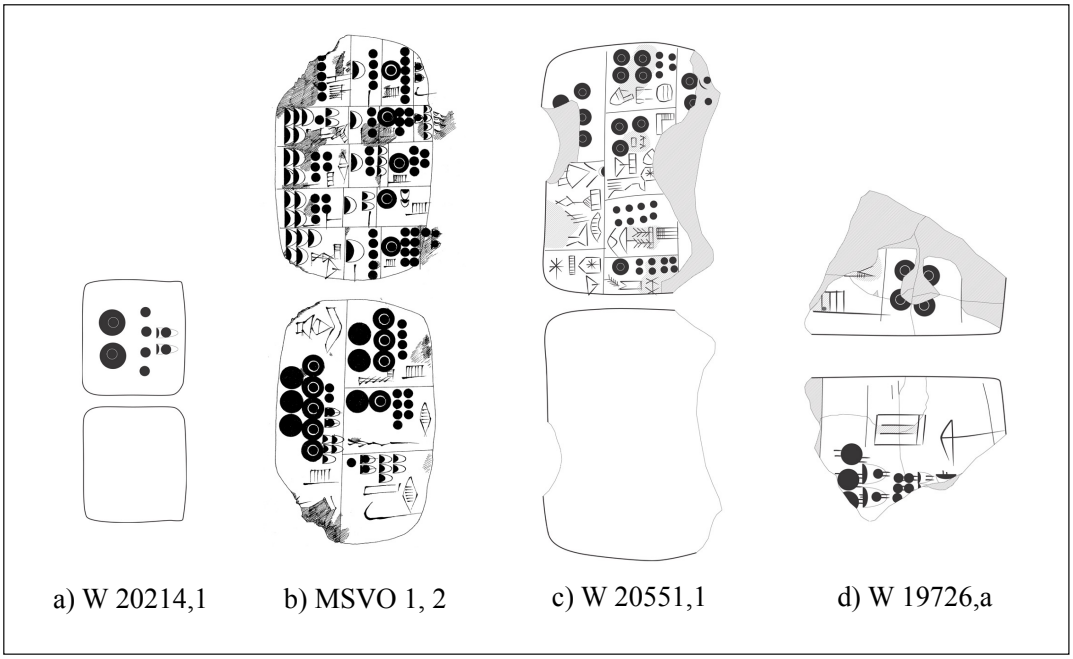


Figure 5.23: Texts relating to agricultural production

Some evidence for the administration of agricultural land included individuals that may have overseen agricultural production. Jemdet Nasr texts MSVO 1, 1 (fig. 5.1d) and MSVO 1, 2 (5.23c) record large plots of land with the sign GAN_2 (a sign which probably depicts a series of 'long-fields' between two canals [Liverani 1998/2006: 15]), and divides this land between different high officials (Friberg 1991 for discussion). MSVO 1,1 also includes subcases to the plots with the designation GURUŠ SAL which might be workers assigned to the plots. These consist of twenty workers each for the first two plots and forty for the third larger plot. This text is so far unique in proto-cuneiform for explicitly relating known human 'worker' signs discussed in this dissertation to agricultural land for work assignments.

Production and redistribution in proto-cuneiform

While the proto-cuneiform administrative texts are preoccupied with the redistribution of goods, it is not always apparent where these goods were produced. The size of Uruk by the Late Uruk period suggests a level of population that would have necessitated the collection of tribute from the surrounding region to sustain the city (Matthews 2003: 110; Pollock 2001: 195). In support of this, the cylinder seal imagery discussed in chapter 3 appears to have an emphasis on transport and presentation of goods (as opposed to scenes of production in Susiana). The many references to other Mesopotamian cities also suggests that some of the goods (and individuals) documented in the texts were part of a network of wider exchange, certainly of social and political as well as economic significance.

To what extent were proto-cuneiform scribes involved in overseeing the production of the various goods in the texts? Pollock (1999:115) already noted that 'there is relatively little evidence to suggest that production of most mundane goods was carried out under direct administrative control. Distribution of the products was, however, subject to some degree of administrative regulation.' Production can be set up in a variety of ways, and tends to differ for the types of goods being produced (especially staple foods versus prestige items). For example, 'attached specialization' (Earle 1981) refers to production sponsored and controlled by elites—the degree and manner of this control and the conditions of production vary, with sliding-scale parameters such as 'dispersed —nucleated', 'small, kin-based'—factory', 'part-time—full-time' (Costin 1991). It has been suggested that attached specialists are more often associated with prestige goods, and independent specialists with

utilitarian. However, some of the texts discussed above show heavy involvement of scribes in agricultural production through calculations of most efficient resource use.

Summary

In proto-cuneiform, the possible slave (SAL.KUR$_a$) or dependent worker accounts are not directly linked to records of the redistributive system, since texts recording (SAL.)KUR$_a$ are not known with associated grain distributions. Instead, proto-cuneiform scribes appeared to make inventories of slaves or dependents, including ages and names in some cases. Redistributive evidence, on the other hand, involved a variety of products and apparently a range of personnel all the way to the NAMEŠDA (a possible 'rulers' title), but links to 'labour organization' are not explicit. Proto-cuneiform appears overall to be a system primarily entrusting grain distributions to 'middle-men' who may have managed production and workers, although scribal exercises and occasional rations texts also evidence the types of micro-management scribes were exploring in order to maximize the resources use within their households. Other, socially significant types of exchange such as temple offerings or gift-giving ('reciprocity', for example as identified in the Ebla documents by Archi 2015) could be explored as explanations for some of the proto-cuneiform accounting practices.

Chapter 5b: Proto-Elamite evidence for labour organization

Proto-Elamite labour organization-related texts are defined here primarily as texts that record human workers, either in rosters or in roster-and-ration texts. Secondarily, some texts relate to the planning of work (so far only agriculture and animal husbandry can be identified), and to the distribution or collection of grain resources that imply oversight of a workforce.

Some key signs relating to proto-Elamite labour organization

Parallel worker-category signs in proto-cuneiform and proto-Elamite

Labour-related contexts in proto-Elamite were identified initially on the basis of parallels with proto-cuneiform signs; building on this, internal evidence from the proto-Elamite texts has helped to clarify and expand the signs used for workers. While the graphical similarity of signs in proto-cuneiform and proto-Elamite is not sufficient to establish a shared origin, the correlation of several such signs provides strong evidence of their relationship: this was the case with the livestock signs, and with the use of M72, M388, and M370 complex graphemes in proto-Elamite, which correspond to SAL, KUR_a, and TUR in proto-cuneiform. Furthermore, the sign M54 corresponds to $ERIM_a$, and in addition to the graphical similarities, various contextual combinations of the signs M54, M388 and M72 confirm their relationship[73] , and suggest it may indicate a category of worker or work groups. The addition of M388 and M72 to M370 in complex graphemes also parallels proto-cuneiform human designations. Since Damerow and Englund (1989a), these proto-Elamite signs have

[73] For example, the combination M54 M388 is used c. 16 times; M72 is counted as a category of M54; and a variant of M54, labelled M53, is used in the combination $M53_a$ M388 M72 in text MDP 26, 205 (fig. 7.29).

been understood as human categories, parallel to the cuneiform ones; prior to establishing this position, it was suggested that some or all of these proto-Elamite signs referred to animals or animal teams (Brice 1962; Friberg 1978).

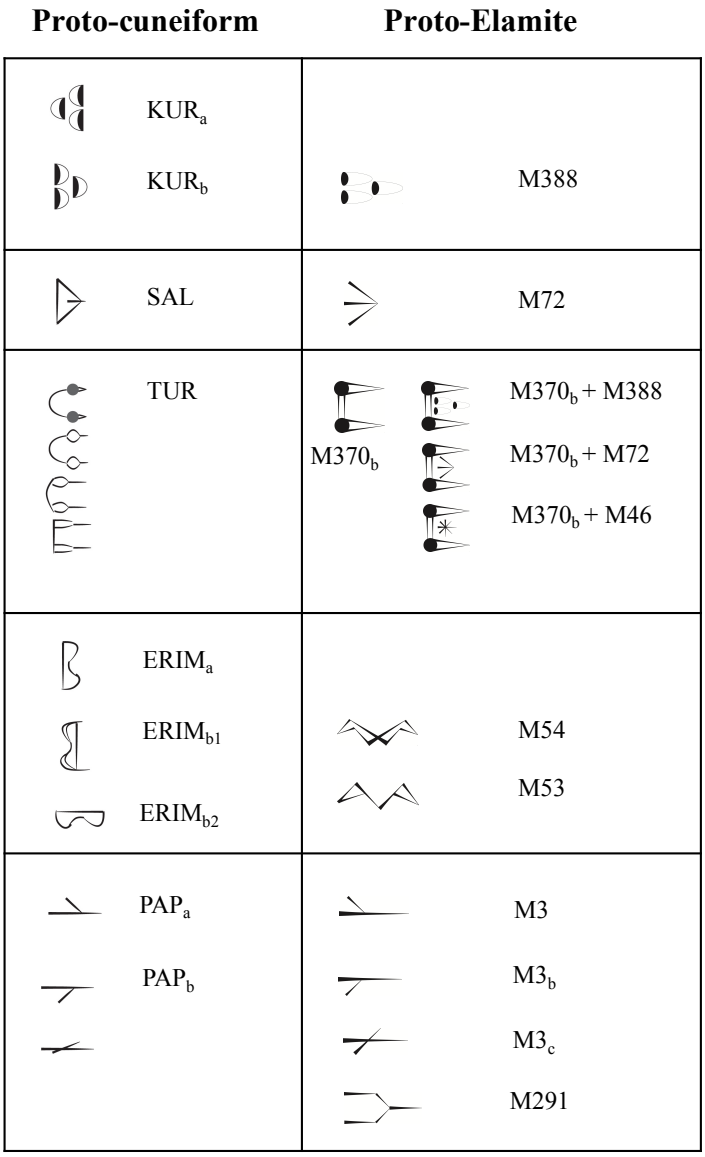
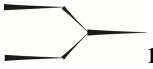
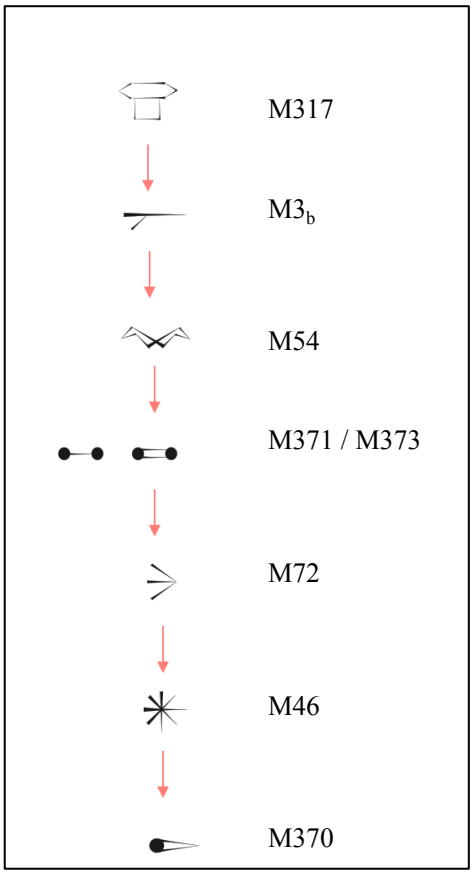


Figure 5.24: Human 'worker' signs in proto-cuneiform and proto-Elamite. After Englund 2004b:24 fig. 14

Two other signs, M3  and M291  may both roughly correspond to PA$_b$/PAP$_{a-b}$  as signs to record work group leaders, later Sumerian ugula (for M291 in this sense, Nissen et al. 1993: 77), although Johnson (2015: 175 ff.) has also

pointed out the graphical and to some extent functional similarities between M291 and proto-cuneiform GEŠTU$_b$  which may both reflect hierarchical social ordering in relation to elite redistributive practices. The 'work team' texts MDP 6, 4997 (fig. 6.28) and MDP 17, 45 (fig. 6.27a) provide the key evidence that M291 refers to an 'overseer' of work groups. Similarly, the long rations texts (Appendix pages 446–8) use M3 in contexts suggesting it has similar semantic range to later cuneiform ugula.

Other signs for humans in proto-Elamite



Texts including M72, M54, and the M370 complex graphemes, and to a lesser extent M388, include other object signs counted in parallel or subsumed under similar headings—this can be used to expand the set of identified 'worker category' signs (Dahl et al. 2018). Desset (2012) identified twenty-two[74] texts including some or all of a set of seven signs that, by their inclusion of M72 and M54, may represent categories of humans. What is more,

Figure 5.25: Worker signs that appear, in repeated sequences, in the order presented here.

[74] Desset identified 26 texts, but four of these have since been joined (two each) to two long ration texts (see Dahl 2012). The texts are: MDP 6, 390 ; MDP 17,112 ; MDP 17,193 ; MDP 17,340 MDP 26,218 ; MDP 26,472 ; MDP 26S, 5040 ; MDP 26S, 5218 ; SE 124 ; MDP 06, 246 + 269 + 302 + 332 ; MDP 6,269 ; MDP 6,285 ; MDP 6,311 ; MDP 6,315 ; MDP 06, 316 + 322 + 324 + MDP 26S, 335 + Sb 15247 ; MDP 6,324 MDP 6,343 ; MDP 6,5007 ; MDP 17,231 ; MDP 17,234 ; MDP 17,292 ; MDP 26,214 ; MDP 26S,333 ; MDP 26S,339.

in nine of these texts the signs can be shown to appear in the text in a hierarchical order (fig. 5.25).

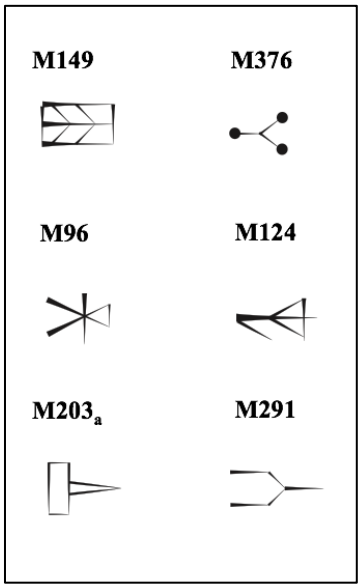


Figure 5.26: Possible 'worker' signs, as identified by their use in a parallel manner to the signs in figures 5.24–5.

Other signs that may represent humans, based on their use in parallel with one or more of the signs in 5.24–5 are shown in figure 5.26. One of these, M124 is counted in parallel to M388 as categories heading each 'team' of workers in the long ration texts (see fig. 6.29). The 'overseer' also appear to be part of the set of basic 'worker category' signs. Text MDP 6, 290 (fig. 7.31) shows paralleling counts of the signs M371, M72 and M291. In particular, the reverse offers a summary divided into the two categories M72 and M291. It is not yet understood how this relates to the notion that M291 can represent an 'overseer' category as described above in text MDP 17, 45 (and fig. 6.27a).

Text types including workers in proto-Elamite

Texts recording what are probably workers have been identified in the form of:

1) simple decimal-count and sexagesimal-count rosters
3) more complex decimal and sexagesimal rosters that may be divided into 'teams'
4) simple ration receipts including counted workers along with capacity measure designations
5) complex ration lists involving multiple groups of workers (sometimes divided into teams) along with capacity measure designations

Some simple proto-Elamite texts appear to count things represented by only a few ideographic signs; since M72 and M54 are sometimes among these, some of the texts may represent short counts of workers. These types of texts are referred to here as 'simple rosters'. The numerical systems in which they are recording individuals are difficult or impossible to determine. It can be noted that M388 is never 'counted' in simple texts in this way in the known corpus. The more complex types of accounts are explored below.

Work teams in proto-Elamite

Some rosters are clearly divisible into teams. Roster MDP 17, 45 (fig. 6.27a) counts a total of 491 'M388' in the decimal system divided into seven different 'teams'. While the M388 remain nameless, each team is labelled with a longer string of signs that may represent the name of an 'overseer'. In a differently-structured roster, MDP 17, 112 (fig. 5.28e) which may be in the sexagesimal system (see below), the text includes fourteen groups of workers, each again headed by a complex designation; however, within the groups, different categories of workers are counted. These worker categories (M317, M54, M373, M72, M46, and $M3_b$) are also known from other labour-related texts. The 'workers' in MDP 17, 112 are, like in MDP 17, 45 above, not recorded by personal name but instead by a 'category' sign—a factor that distinguishes the accounting context of the M72 in this text from the SAL in many proto-cuneiform accounts that count women along with 'naming cases'.

Decimal accounts

The sheep and goat counts, as well as the list of equids (MDP 17, 105), are recorded in the decimal system. In some cases, proposed 'worker category' signs in proto-Elamite

are counted in the decimal system as well. Signs that can be proven to be counted in the decimal system (in some cases) include M388, M291, M96 and M54. There is no known proto-cuneiform decimal system, and it has been suggested that, along with the use of the sign for '100' as a high-status human, some text structures might indicate that proto-Elamite scribes were functioning in a social context in which the number '100' held significance as an organizing principle (Dahl 2013: 254).[75]

Text MDP 17, 86 (fig. 5.27a) is a simple count of M54 in the decimal system; this tally includes only a count of M54 and three kinds of small livestock, raising the possibility that M54 refers to animals in some (or even all?) contexts[76]. M54 is also counted in the decimal system in the roster-and-ration text MDP 26, 156 (fig. 5.27b).

The use of the decimal system to count individuals designated M388 is demonstrated in only a few texts, including MDP 6, 4997 (fig. 6.28) and MDP 17, 45 (fig. 6.27a). Text MDP 6, 4997 is a ration-and-roster text, and MDP 17, 45 is a roster of '592' M388 (confirmed by the summary designation), divided into unevenly-sized teams with various heading designations. If M388 are counted humans, the nearly 600 (nameless) individuals recorded in this text give a sense of the scale at which proto-Elamite scribal organization sometimes operated.

[75] A similar administrative organization involving numerical 'ideals' might be seen in the Roman centurions, who were military officers in charge of units of men; deriving from the root *centum*, these units nonetheless did not normally consist of 100 men, but another set figure depending on the time and context.

[76] Another text which counts M54, livestock (M367) and other 'worker categories' M371) in parallel is MDP 26, 342.

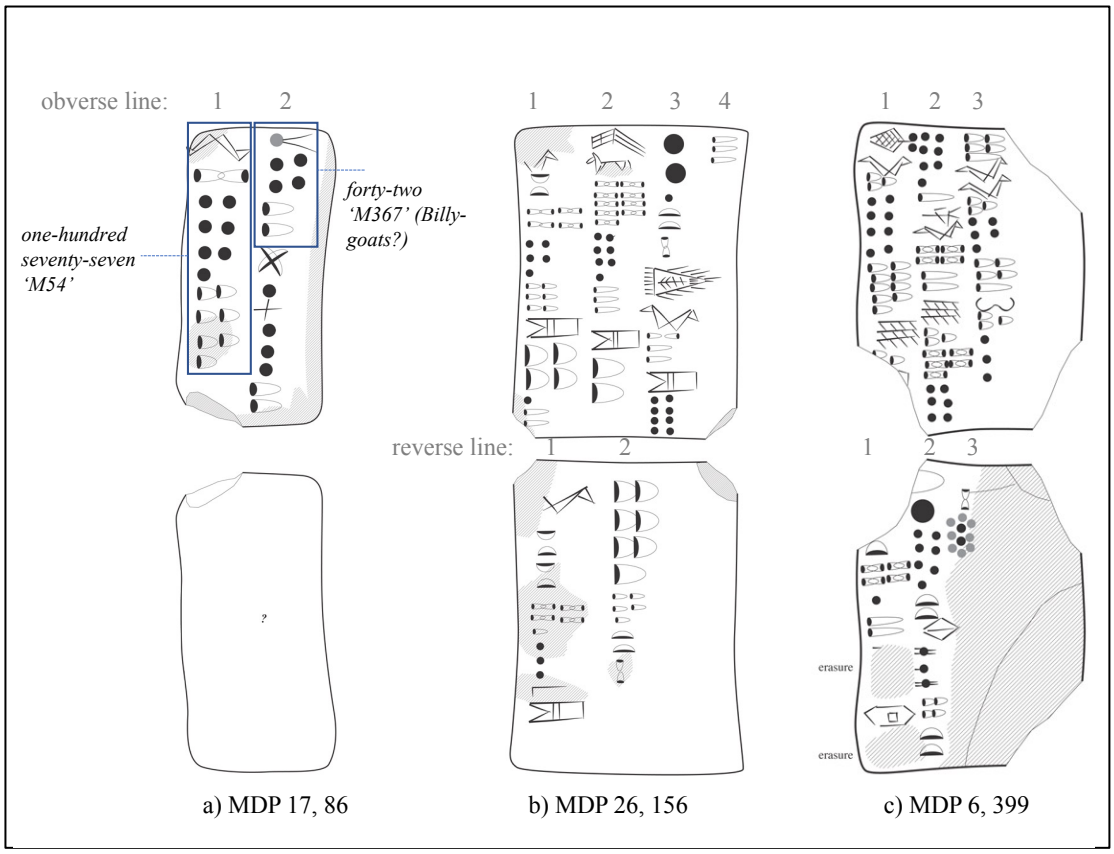


Figure 5.27 Some decimal counts in proto-Elamite. Other important examples are presented in fig. 6.27–8.

Sexagesimal accounts

The sexagesimal system and the decimal system are not always easy to distinguish in proto-Elamite, since the two most frequently used numerals (N_1 = '1' and N_{14} = '10') are common to both systems. In addition, the fragmentary state of many texts does not allow for comparison between a text's body entries and the summary line in order to allow for calculating the system employed. However, based on calculations in some well-preserved texts, Englund (2004b: 109) identified seven non-numerical signs (M317, M149, M376, M291, M72, M54, M320) as being counted in the sexagesimal system in some cases. The signs were identified as counted 'objects' (in this case humans) because of their final position in the text entries before the numerical entries.

Some signs can be subsumed into a category represented by another sign, as shown by text summaries (fig. 5.29).

Structural similarities between MDP 6, 390 (fig. 5.28d) and another text, MDP 17, 112 (fig. 5.28e) suggest that the latter—despite the ambiguity of the numerical notations—may also be a sexagesimal rather than a decimal roster[77]. That is, both texts follow a pattern in which designations of a few signs head 'groups' of counted worker signs set in a hierarchical order (fig. 5.25), beginning with M317 and followed by 'worker category' signs including M54 and M72. Both texts have a 'summary' beginning with M317; however, in MDP 17, 112 this worker category remains distinct from three following worker categories totalled separately: M54, M373, and M72.

While the structure of these two texts is similar, the scale is different. MDP 17, 112 counts mixed 'teams' made of one or two of each worker category. Yet in the summary, the 'team' structures are ignored and the number of each type of worker category is recorded instead: 22 of M317; 19 of M54; 3 of M373; and 9 of M72—the text therefore records 53 individuals in the summary. In MDP 6, 390 the number of workers of each category varies more, and are much larger (usually dozens); all of these are recorded in the total of '186' under the category M317.

Texts MDP 6, 391, MDP 6, 213, and MDP 26, 317 (fig. 5.28a–c) are sexagesimal counts with a somewhat different structure and sign-set to the two discussed above.

[77] Hawkins noted the use of a derived numerical sign, N_2, in this text, and the odd circumstance that while in proto-cuneiform N_2 is used in the sexagesimal systems, in proto-Elamite it was (apparently) used in the decimal system. An identification of MDP 17, 112 as a sexagesimal count would therefore also be consonant with the close similarities in numerical systems between proto-cuneiform and proto-Elamite.

They share with those two only one ‘worker’ sign, M373/M371. All three of this second type of account enumerate two signs: M376 and $M149_a$.

The significance of the numerical systems to labour organization

At least some of these signs (M72, M54, and M291) are counted in the decimal system in other texts (e.g. M54 in fig. 5.27a–c). This is a point not previously noted, and requires further investigation—how is it that the same ‘object’ can be counted in different numerical systems? Does it relate to the context of the account? For example, it may be that systems contrast counts of domestic workers in the sexagesimal system and counts of ‘military’ conscripts or other personnel related to decimally-counted units. Or, by observing the examples above including M54, one might explore whether decimal counts of M54 refer to yolked animals, while sexagesimal counts of M54 indicated human workers.

Englund (2005: 125) proposes the group of signs counted in these sexagesimal texts might represent ‘high status humans’, as opposed to the workers counted in the native decimal system; he suggests this might be because the sexagesimal system, being loaned from proto-cuneiform, had status as an exotic import from a powerful neighbouring civilization. Whether or not this explanation is accurate, the use of two different numerical systems to count humans suggests that different cultural and administrative circumstances are reflected in decimal as opposed to sexagesimal accounts.

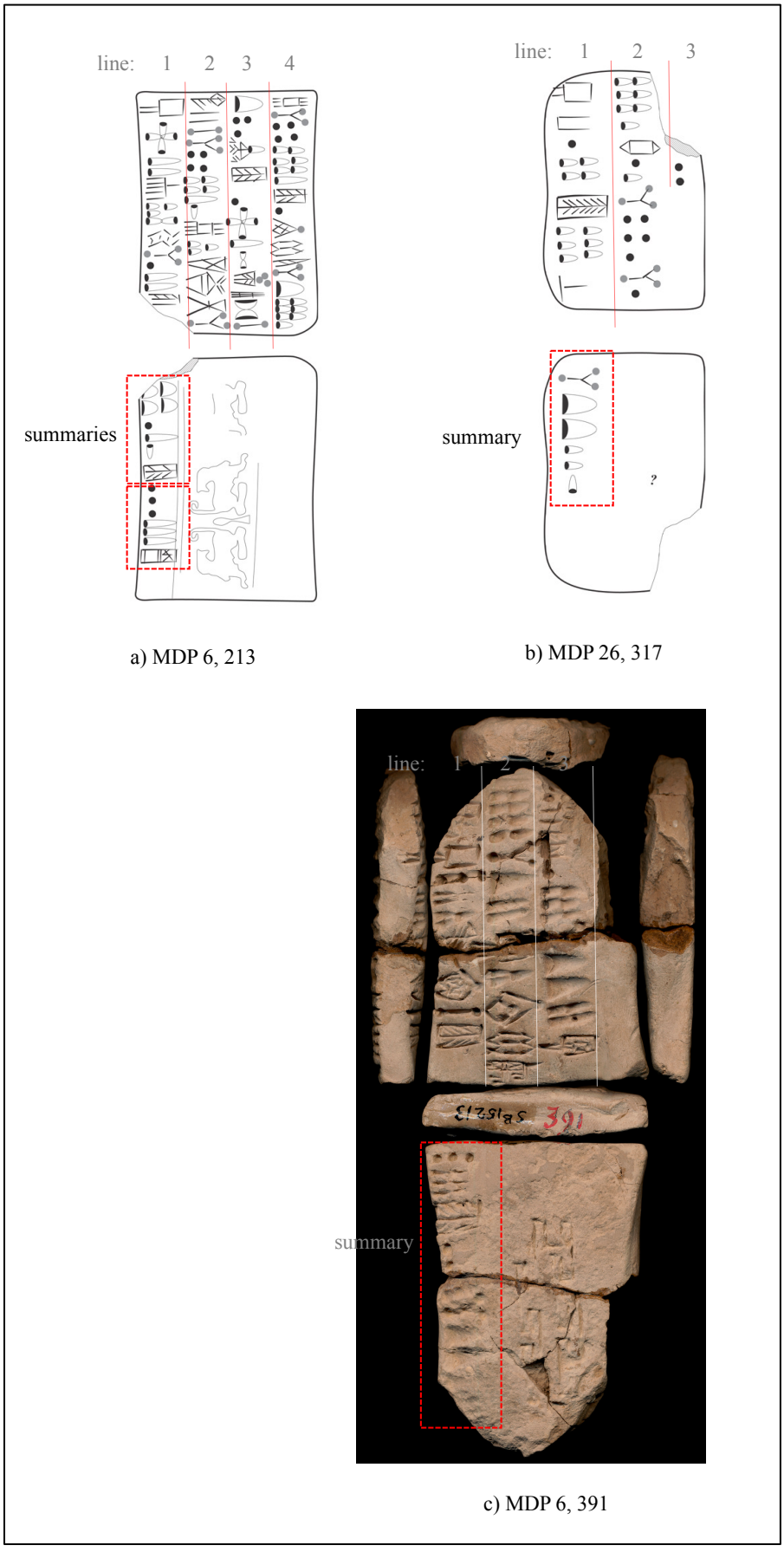


Figure 5.28(1): Sexigesimal counts of humans.

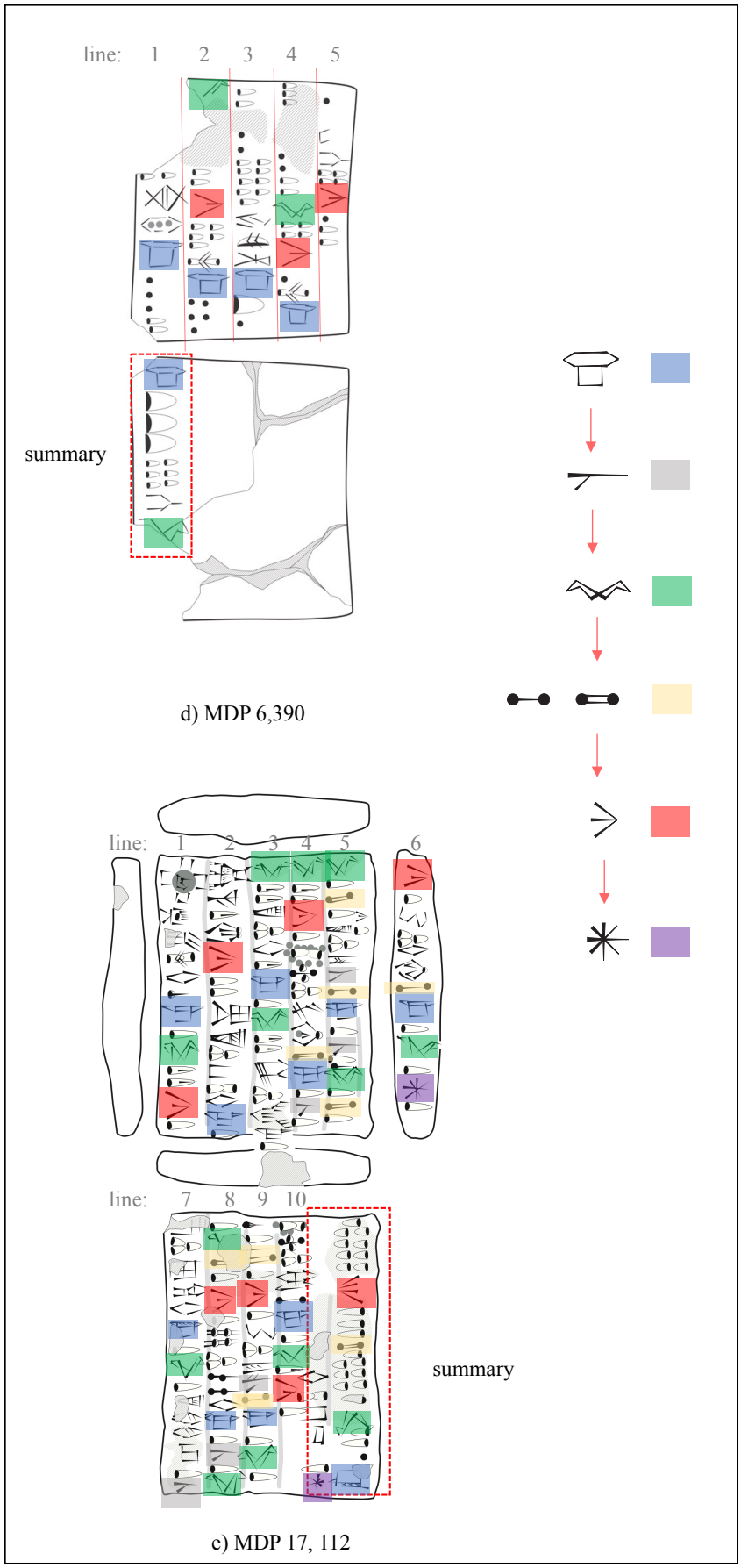


Figure 5.28(2): Sexigesimal counts of humans. Drawing of MDP 17, 112 after L. Hawkins 2015.

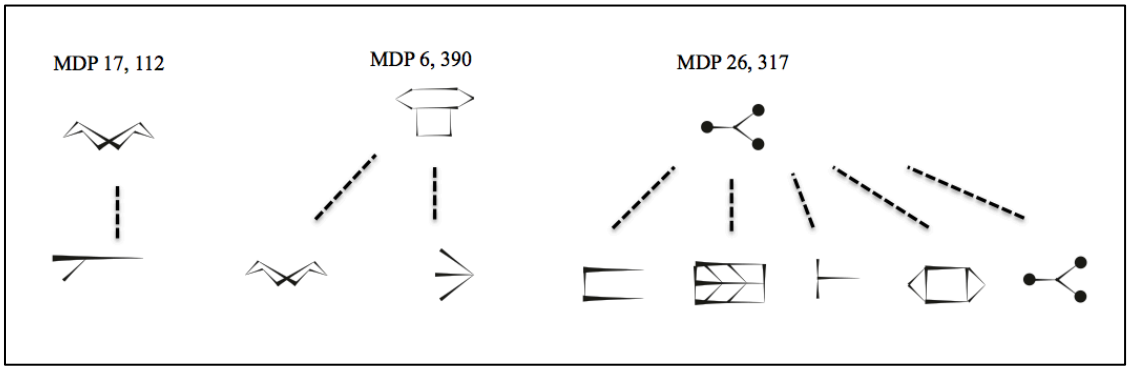


Figure 5.29: two-tiered classification system of some sexagesimally-counted signs

Rationing and redistribution in proto-Elamite

The capacity system C

Three of the six main numerical systems in proto-Elamite are, by Mesopotamian parallel, proposed to record products in a rationing system. The Capacity System C is the equivalent of the Mesopotamian ŠE system in most of its sign forms and bundling principles, and both are thought to relate to 'rationing' systems comparable to later known Mesopotamian remuneration in barley for household dependents and centralized labour projects (Damerow and Englund 1989a: 24–7). Two derived systems, C' and $C^{\#}$ may record specially qualified types of rations—C' may represent emmer (rather than barley) distributions, and $C^{\#}$ may be related to the products rationed in $B^{\#.}$ While the capacity systems are hypothesised to ration loose grain product, the bisexagesimal system may count discrete objects, perhaps loaves of bread or other products.

Like in Mesopotamia, the proto-Elamite capacity measures are also used to record animal fodder. This is shown in the summary of text MDP 17, 256 with establishes a

ratio of $2N_1$ in capacity measure per head of sheep (Damerow and Englund 1989a: 55 fn. 147)—four times the equivalent of the commonly attested ratio for humans in many proto-Elamite accounts ($15N_{30c}$), although the timeframes for each type of account remains unknown. Other texts including sheep and grain appear to have different ratios.

There are some notable differences between the proto-Elamite capacity system and the proto-cuneiform ŠE system (see fig. 5.30). In the proto-Elamite capacity system, the signs for the smallest units (those below $N_{39a/b}$) graphically and numerically differ from the proto-cuneiform ones of the equivalent ŠE system. Proto-Elamite has signs for units that are much smaller than the smallest units known in proto-cuneiform. Furthermore, these smallest units (N_{30d} and N_{39c}) are not especially rare: N_{30d} is used in around 160 texts, and N_{39c} in around 30 texts. That is, either very small amounts of grain (or other products)—as small as 1/5 modern litre[78]—were a regular administrative concern to scribes, in situations that remain unclear, or we have not correctly 'calibrated' the values of these units to the Mesopotamian parallels and/or their modern equivalents (Damerow and Englund 1989a: 21 ff.).

The sign N_{30c} is graphically very similar to Mesopotamian N_{30a} and occupies the same place in the numerical factor diagram (fig. 5.30). It appears in around 225, or about 15% of available proto-Elamite texts (with around 580 uses altogether), in comparison to proto-cuneiform N_{30a} which occurs in less than 1 percent of proto-cuneiform texts (40 out of almost 4,700 Uruk III phase texts, with about 80 uses

[78] By taking N_{30c} as equivalent to proto-cuneiform N_{30a} and both as roughly equivalent to the later Sumerian $sila_3$.

altogether). This might be an indicator of the differing accounting cultures, whereby proto-Elamite scribes were more often recording amounts at specific 'daily ration' levels.

The standard ration rate

A standard ratio of individual worker to capacity measure is found in dozens of proto-Elamite texts, and represents some of the strongest evidence for the use of proto-Elamite writing to record rations for workers. The ratio is '1 worker: 15 N_{30c}'—that is, $1N_1$ (decimal or sexagesimal system) per $15N_{30c}$ (capacity system). If interpreted in light of the proto-cuneiform equivalents in an 'all other things being similar' manner, this ratio would indicate that individuals in the texts were allotted precisely a half month's rations, following the 'daily ration' amount N_{30a} set in proto-cuneiform text MSVO 4, 27 (fig. 5.14/5.30). However, interpreting this ratio of 1 worker: $15N_{30c}$ is difficult or impossible, since we do not know the time-frame referenced in proto-Elamite accounts—no proto-Elamite time-keeping system has been identified. A single N_{34}, which represents '60' of the N_{30c} sometimes appears on the edge of a proto-Elamite tablet, and it has been speculated that this may refer to an 'accounting period', by Mesopotamian parallel of 'two months (e.g. texts MDP 6, 203 and 353). If this could be proven, it would help in interpreting proto-Elamite rationing accounts. For now, it is not possible to say whether the 15:1 ration reflects a tradition in which scribes were rerecording 15 days' worth of rations, or whether $1N_{30c}$ in proto-Elamite, unlike $1N_{30a}$ in proto-cuneiform, was not connected to the notion of a single man-day of work. It is, however, notable that the proto-Elamite 'ration' level is not just any number, but precisely half the Mespotamian standard in MSVO 4, 27. The ability to attach an absolute value to the proto-Elamite measures, as well as explaining their relationship

to the proto-cuneform capacity measures, is less important than the more general conclusion which the 1 to 15 proto-Elamite 'worker to grain' ratio offers: that is, scribes were controlling grain distribution by allotting a standard capacity measure to each of a large number of diversely categorized workers.

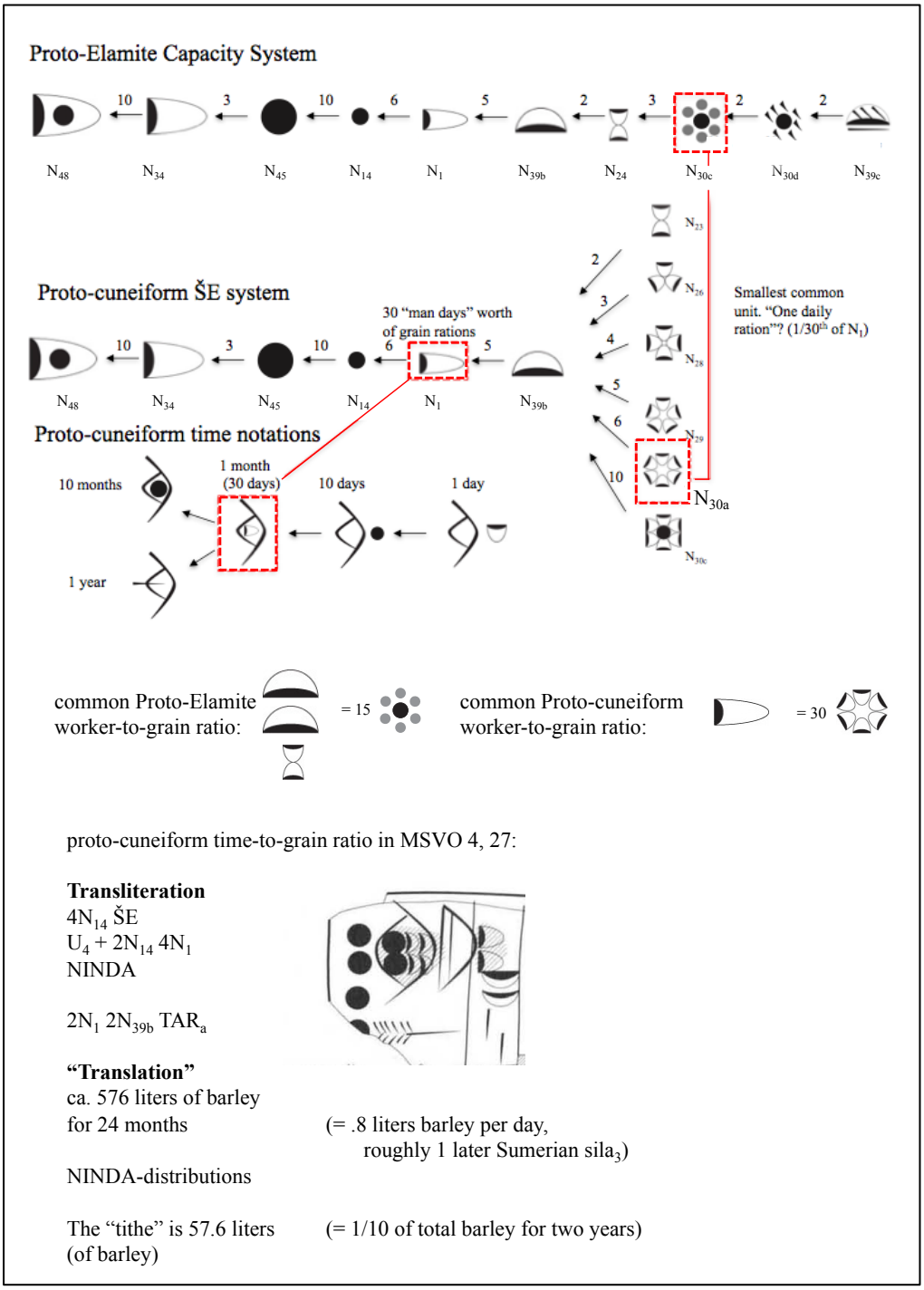


Figure 5.30: Proto-cuneiform and proto-Elamite capacity system measures, rationing and calendrical relationships.

Signs relating to redistribution

At least three signs—M288, M297$_b$ and M243 —qualify capacity measures and may relate to grain redistribution. Another sign, M36 qualifies grain products in a bisexagesimal system. This sign is inscribed with numerical capacity measure notations that may indicate the capacity volume of grain included in the counted products. Johnson (2015: 194) has suggested that M36 may be a *functional* equivalent to proto-cuneiform SILA$_3$ (although a *graphical* equivalent to GEŠTU$_b$), therefore relating to 'elite' rationing practices.

M288 is most clearly related to grain disbursements to the personnel identified as 'workers' above, as well as being used in many other unclear contexts. This sign is by far the most common sign in the writing system, and frequently occurs before capacity measure notations. This often includes contexts in which worker category signs are present, and in which the standard ratio of 1 worker to 15N$_{30c}$ is observed. The correlation of the standard 'distribution' amount with M288 suggests that it could relate to a redistributive system with one very common administratively predetermined ration size.

In some simple texts, only one of the 'household' signs (e.g. M157) and M288 are used, followed by a numerical notation (e.g. MDP 26, 5; MDP 26, 7). Sometimes M288 appears at the end of the first entry of the text, and may qualify the capacity measure in the remainder of the text's entries. In other cases, M288 is repeated at the end of each entry before the numerical notation (MDP 17, 490), or at the end of groups of entries as in the very long rations texts. A group of related texts all bearing the short subscript M9 M3$_b$ (all but three texts of MDP 26, 29–45) include M288 plus

a numerical notation as the entry prior to the subscript. This group clearly represents a coherent accounting context, although their content is not yet deciphered (see fig. 6.24 and discussion).

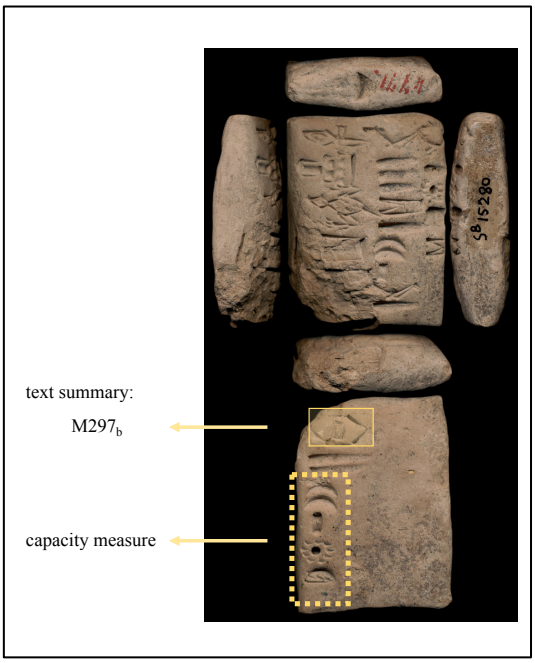
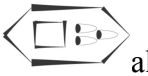


Figure 5.31: Text MDP 26S, 4771 is a small grain or beer distribution text, using the sign M297b in the summary, along with a small capacity system notation.

Another sign used to describe capacity measures is M297b:  . Meriggi argued that this sign is the Proto-Elamite equivalent of GAR/NINDA and that it indicates rations of bread or grain, while Friberg (1978) explored the possibility that it represented both graphically and semantically a 'keg' (e.g. of ale). Often (but not always) this sign appears near the end of a text's 'header' or extended first entry, and/or as the sign characterizing the text summary in capacity measures (fig. 5.31). A complex grapheme, M297b + M388,  also appears once, which suggests there was sometimes a link between capacity measures described as M297b and individuals described as M388 ('male workers'?).

An important use of this sign is in the second summary line of the complex account MDP 6, 5242 (fig. 6.31), where it qualifies a capacity measure, presumably of grain, that represent approximately 30% of the larger first total. The count from the body of the text confirms that this second summary represents a portion of the first summary. Although interpretation of this remains difficult, one explanation is that it could

represent the amount of a predicted or actual harvest yield set aside for future agricultural work. In fact, for the third millennium, in Mesopotamian cuneiform administrative texts, the production costs for agricultural labour—seeding, feeding the workforce and plough animals—were traditionally estimated at one third of the predicted harvest yield (Liverani 1998/2006).

Other uses of the sign M297$_b$ include some short texts where it qualifies a capacity measure (MDP 26, 19), but also often in the body of a text, among other diverse entries, in circumstances that are difficult to interpret (e.g. MDP 26, 6).

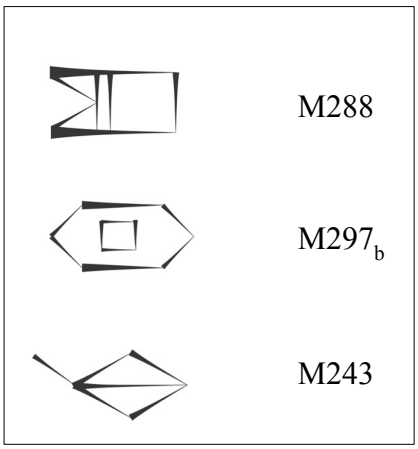


Figure 5.32: Some signs that qualify capacity measures

Ration texts

A group of eleven texts[79] recording M54 M388 'workers' form a particular genre, based upon their physical features, shared sealings, and very similar text structure and content (Friberg 1978: 26–8; Dahl 2005a: 110). These texts have been interpreted as rations for workers in fields, in which M54 may stand for 'seeding workmen or

[79] MDP 6, 223 and 236; MDP 17, 67; MDP 26, 99; MDP 26S, 295; 4752; 4773; 4783; 4802; 4803; 5043.

workmen and their plow animals' (Damerow and Englund 1989a: 57–8; Englund 2004b: 118; also Dahl 2005a:110). It is possible that a field-work context is indicated by the use of the 'yoke' sign M54 to qualify the M388 workers (or indeed yoked traction animals, as Friberg [1978] had earlier proposed). However, the sign could also reflect, as in later Mesopotamia, a worker's engagement by the administration as a part of a work 'troop' in an abstract sense not linked to the literal meaning of 'yoke' (Dahl et al. 2018)[80]. Another entirely speculative explanation may be that the 'yoke' should be interpreted as human arm-stocks for prisoners of war, which would open up a different avenue in understanding much of the use of proto-Elamite writing. The ratio between M54 M388 'worker' and capacity measure of grain in each of these texts is the standard 1 worker to $15N_{30c}$.

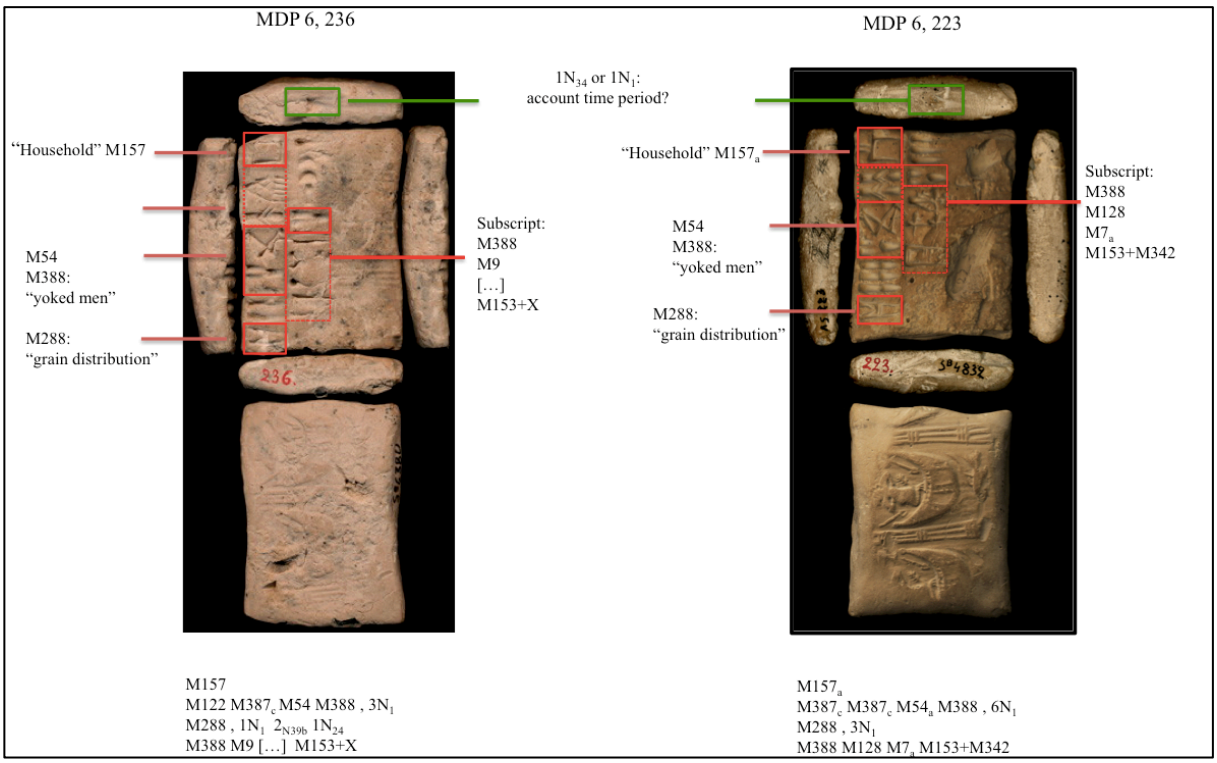


Figure 5.33: Ration-related receipts for M54 M388

[80] Despite the temptation to interpret signs in the earliest writing systems as having more 'literal' or close relationships to pictographic referents, identify signs with a straightforward 'pictographic' function is very rare. Signs are often used in multiple ways already in the proto-cuneiform texts, as shown especially in chapter 6a.

A similarly-structured text (CahDAFI 1, 58, 6) may record rations for a different worker category, $M203_a$ M388, paralleling the formula M54 M388 in the texts above, that is: [worker category sign] + M388 ('men'), since the sign $M203_a$ is understood as a worker category in other texts (Dahl et al. 2018 fig. 1). Unfortunately, this text was published only in drawing, and remains un-located. It is not clear in the above texts whether the M54 M388 are counted in the decimal or sexagesimal system.

Another text that includes rations for groups of workers is MDP 26, 156 (fig. 5.27b). This text may be interpreted as a decimal count of the M54 ('troops') of three different households, along with grain distributions (M288). Significantly, the summary of these 'troops' altogether with a grain summary shows that even with these large numbers, the text *almost* holds to the ratio of 1 'troop member' to $15N_{30c}$. In fact, it can be construed as precisely $15N_{30c}$ for each of the 2,530 individuals counted, with a remainder of $15N_{30c}$ —for one more individual? Since the original tablet can't be accessed, it is not possible to check if there was indeed one more individual listed on the tablet; alternately, the unusual mark after the decimal count before the sign M288 might relate to this extra $15N_{30c}$.

A similar example of a decimal-count roster-with-ration text is MDP 6, 399, which counts six groups of different kinds of M388 and /or M54, consisting of dozens to hundreds each:

translated numerical notation:	**counted object:**
89	M54 M388
71 + […]	$M41_g$ M388
402	$M123_a$ M54
565	$M41_g$ M388
55	M54 M54 M388
30	$M51_a$ M388

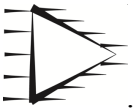
Complex worker-team and ration texts

Englund (2004b: 105) noted that some proto-Elamite texts have internal ordering that mimics 'the organizational structure of a labour unit'. This is true for some mid-level accounts such as MDP 6, 4997 (fig. 6.28/ Nissen et al. 1993:76–8), as well as for the longest set of proto-Elamite texts, which may be grouped together based on a number of characteristics, and identified as a genre of complex ration lists (Appendix pages 446–8). The latter are large, and probably represent the compilation of shorter accounts. All of these are only partially pieced together from several fragments. A study of the complex texts is presented in Dahl et al. (2018). One of the distinguishing characteristics of the text type is the use of M370 complex graphemes, a sign-set which is known almost exclusively from this text genre (chapter 8b).

These texts have been understood as accounts of 'work teams', made up of nameless 'workers' categorized by a set of 'worker category signs', and headed by a 'foreman/overseer'. The designations of the 'foremen' appear more complex, and may include personal names along with a 'foreman' category marker (often M124 or M388). Each group is followed by a notation in the capacity system that is set at

$15N_{30C}$ per person in each group, and the groups vary in size from a few to around a dozen workers, including the foreman. The interpretation of these texts in a labour-and-rationing context is not merely a reflection of our knowledge of later cuneiform rationing practices (although those texts do seem to provide parallel): rather, the argument is built upon a number of internal text features, as well as the standardization of the capacity measures used, and the sign parallels with proto-cuneiform texts (Dahl et al. 2018).

MDP 6, 5242: an 'elite' redistributive text?

A very long, well-preserved text, MDP 6, 5242 (fig. 6.31–2) is particularly known for its seal-impression including an emblem that also appears in the script as a 'household' sign M136:  . The figures on the seal—a lion grasping two small rearing bulls, and a bull grasping two small rearing lions—suggests a power-balance, possibly referring to two powerful households, or perhaps a mythological scene. This account is 'high-level' as evidenced in several ways: the large capacity measures; the length and complexity of the text (at around 118 entries); and the use of signs which are understood in other contexts to represent households, work group 'overseers', or personal names. In contrast, this text does not include M72 or the M370 series—that is, it does not appear to include women and children. It does use M388, apparently in its capacity as a qualifier (of a particular category of man?) before other complex designations that may be personal or household names.

Other texts relating to labour organization

Animal husbandry

The tracking of animals and animal resources implies the administration of personnel involved in this work. The majority of Susa texts relating to sheep and goat herding, as identified by Dahl (2005a), were published in MDP 17. These twenty-eight texts may have come from a particular archive (Dahl 2005a: 85, 98), and a possibly separate group is represented by texts published in MDP 26 (Dahl 2005a: 85). Some texts appear to count herded animals by species and sex, and some record animal products, with dairy products being the most securely identified signs. Both accounts and primary documents can be identified in relation to animal husbandry at Susa. Only one text from Tepe Yahya (out of the 27 texts found at that site) appears to relate to shepherding: Tepe Yahya 11 (fig. 7.39) may list named owners or workers assigned to small flocks of sheep (M346), and the structure of this text is paralleled to some extent in a few texts from Susa (e.g. MDP 6, 204 and 212). The single longer text from Tepe Sialk (Ghirshman 1934: 116/ P009524) and the single text from Tepe Ozbaki (unpublished)[81] are also sheep and goat accounts.

In addition to accounts recording sheep and goats, 114 Susa texts include signs understood to represent products from these animals, including ‘dry cheese’ and ‘butter-oil’ (Dahl 2005a: 125). A very limited number — only twelve texts in the available corpus — include both animal signs and animal product designations.

[81] CDLI number P235686; referenced in Madjizadeh 2001: 145

There is only one known text that appears to be dedicated to recording equids, using various forms of sign M418 (MDP 17, 105, Potts 2014b). This is a simple 'tally' in the decimal system, with only a few ideographic signs in the text that might further modify the types of equids; it is unclear if these few signs could represent 'owners' of the equids in question. There are a few other possible equid signs known in the available corpus: two uses of an equid-like sign (M335 ) appear in separate complex designations in the worker-and-rations text P009185, where the sign's function is not understood, as well as once in MDP 17, 124, an unknown account type.

Cattle have not yet been identified in proto-Elamite, despite their assumed significance to proto-Elamite household economies and their prevalence in the proto-Elamite glyptic (Dahl 2013: 255). While many of the signs below are hypothesised to represent human workers—following a number of converging pieces of evidence—the possibility remains that some of the 'worker' signs could turn out to record cattle or donkeys. Particular candidates are M371 and M376, which both may be modified with between 1 and 3 'strokes', recalling the 1–3 year-old animals in proto-cuneiform accounts (but also the 'children' of scheme 2, page 376 ff.).

Agricultural production

A few different kinds of texts may relate to the administration of fields and agricultural resources, although they do not directly record workers (fig. 5.34). A single possible field measure text has been identified (MDP 26S, 5224, fig. 5.34a).

The only non-numerical sign used is the 'household / account' sign M157 known from about a quarter of transliterated proto-Elamite texts. The existence of 'seed plow' texts from Susa, was proposed by Damerow and Englund (1989a: 57–8) based upon an observed numerical relationship between the sign M56 (the 'plow') and capacity measures qualified as M288 ('grain'?). This relationship was already noted by Scheil in 1935, and Desset (2012: 31) provides a list of the identifiable texts, totalling ten with possibly two further[82]. The numerical correspondence is 1 M56 — occurring in graphical variants—to 2 N_{39b} (in the capacity system) of M288, the 'grain container'. Damerow and Englund claimed that if the capacity system measure N_{30c} was taken as twice the size as the cuneiform N_{30a} (Damerow and Englund 1989a: 57–8)[83], then this ratio would be suitable for seed-grain for a field of approximately 1 Sumerian *iku* (roughly one modern acre) (1989a: 58 fn 159). By implication, their tentative identification of a historical continuity in field size would also confirm their approximation of the absolute capacity measure of N_{30c}. Further evidence is required to strengthen this interesting proposal.

Plowing and worker ration texts?

Damerow and Englund (1989a: 57 fn 159) read text MDP 26, 84 (fig. 5.34c) to contain M56, although this is not visible in Scheil's copy. Based on this reading, they propose to understand the capacity measures for M54 in this text as 'rations for workers charged with plowing and seeding one unit of [M56]'. The numerical notations are not fully reconstructable to check the numerical correspondences in this

[82] MDP 26, 73 ; 76 ; 84(?) ; 103 ; 109 (?); 110 ; 111 ; 112 ; 113 ; 116 ; 117 ; 174 ; 78 may include a scribal error, and 114 with similar format apparently holds a different ratio between M56 and M288 — judging by Scheil's 1935 drawing.

[83] Following the logic that the 'worker ration' size in proto-Elamite, at $15N_{30c}$, is apparently 'half' that of the proto-cuneifom monthly standard of $30N_{30a}$ in MSVO 4, 27. But see comments above regarding possible 15-day accounting periods for proto-Elamite.

text. Only five other texts using the sign M56 also contain M54, and these do not appear to be similar accounts or to directly record rations for M54 workers in association with field-work[84]. In addition, twelve texts using the plow sign M56 also use M388. This does not imply strong correlation between M56 and M388 or M54, given that the latter two are both very common signs in proto-Elamite.

Nonetheless, one text, MDP 17, 18 (fig. 5.34e), links agricultural resources (M56 M288) to named or other complexly-designated individuals of two classes: M388 and M96. MDP 17,18 appears to represent part of a redistributive system involving agricultural produce and named members of the society, involving relatively large amounts of (presumed) grain. The signs M388 and M96 in this text do not display the 1:15N_{30c} 'ration' ratio observable in texts with 'workers'; instead, each M388 or M96 individual (excepting the first at 120N_{30c}) is associated with a much larger capacity measure, the equivalent of 180N_{30c}. It must be noted that this amount, by Mesopotamian grain-to-calendrical relationships would indicated an even ½ year account (180 days) at 1N_{30c} per day, or precisely one year if Damerow and Englund [1989a 57–8] are correct that N_{30c} represents twice the capacity measure of N_{30a}, and by extension perhaps feeds individuals for two days. However, as above, the implications of this even number are difficult to interpret. The text might represent larger grain distributions to 'foremen' or other individuals in leadership roles who could have acted as middle-men between the grain moved from central storage to

[84] MDP 6, 5009 and MDP 17, 423 are fragments of large, complex accounts with no specific relationship between the entries containing M56 versus those containing M54. Text MDP 26S, 5241, also fragment of a larger account, does appear to be primarily concerned with grain calculations and includes a count of 120 + x associated with $M387_i$ $M387_i$ M54 in the sexagesimal (or less likely, bisexagesimal) system. MDP 6, 217 includes M56 in the header, and the following entry uses M54 in an undeciphered complex designation M54+$M384_i$ +$M54_i$ M365.

workers and animals or used as seed on fields managed by the scribal administrators. A similar practice was proposed by Nissen et al. (1993) for proto-cuneiform.

MDP 6, 389 (fig. 5.35) may provide important information about the use of the sign sequence $M56_f$ M288. In this text, capacity measures following M56 M288 on the one hand, and a complex designation beginning with M388 on the other, are totalled together under M288 ('grain') on the reverse. The text begins with a header of $M5_a$ which might function here as a graphical variant of M391, a possible 'field' sign (Dahl 2005a: 88–9).

No texts with the plow sign M56 also use M72 or M370 in any permutation, and we are therefore not able to securely link that small genre of proto-Elamite labour texts including women and children to agricultural work.

Possible harvest yields

In contrast to the proposed 'seed-plow' texts above, MDP 6, 221 (fig. 5.34b) which also uses the plow sign M56 may instead record harvest yields. The total on tablet MDP 6, 221 is equivalent to 14,388 N_{30c}. These very large amounts of grain differ completely from the proposed 'seed-texts'. Taking N_{30c} as the unit most likely to be roughly comparable to either one later Sumerian $sila_3$, or roughly .8 modern litres, the text records between approximately 11,500 – 23,000 modern litres of grain, divided over four or five different fields. The relationship between each field and capacity measures of grain in this text therefore differs widely from the 'seed-plow' texts above, but may be suitable for harvest yields. A structural difference is also visible, since the plow sign M56 is used immediately before the grain container M288, without intervening numerical units as occur in the seed-plow texts above. The sign

also occurs in graphical variants, and it is unclear if these hold different meanings. One interpretation may be that M56 in this text implies both a standard-sized plot of land and other conditions (way of plowing, crop sown, condition, season, etc).

Summary of agriculture-related textual evidence

The field measure, seed-plow, and possible harvest yield texts relate to resource planning, but do not directly record workers involved in the fields. Only one possible text combining M54 ‘workers’ with rations and an M56 ‘field/harvest’ has been identified (fig. 5.34c); while several texts may include named M388 individuals in association with larger ‘ration’ amounts of agricultural produce from fields (indicated with the combination M56 M288). It might be suggested that M388 in these cases could represent a relatively high-status small agricultural estate manager, something

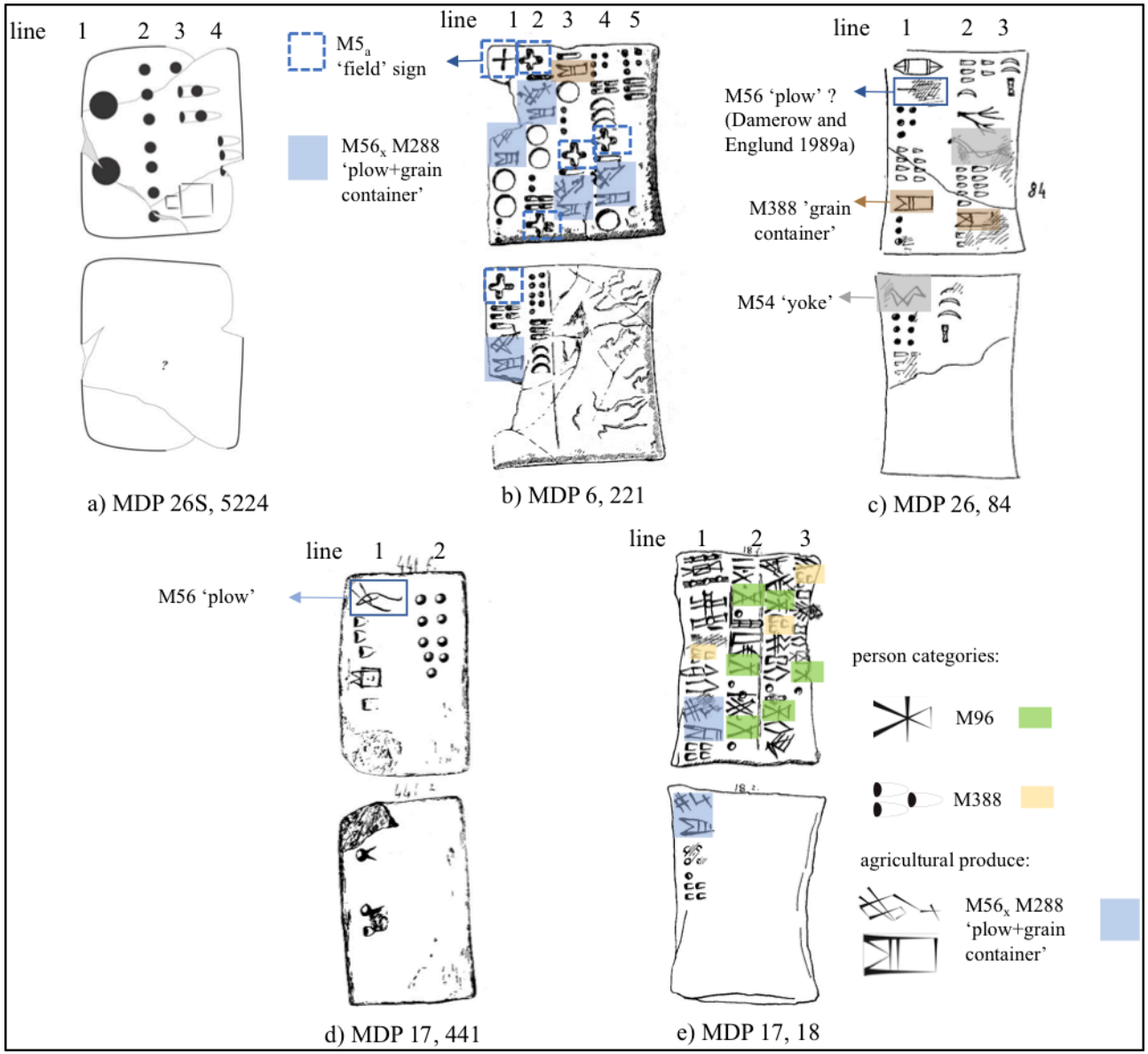


Figure 5.34: Texts relating to agricultural production a) field measure calculation b) 'seed-plow' account c) 'harvest yield'(?) account d) poorly understood 'field' and grain receipt e) redistribution of agricultural produce?

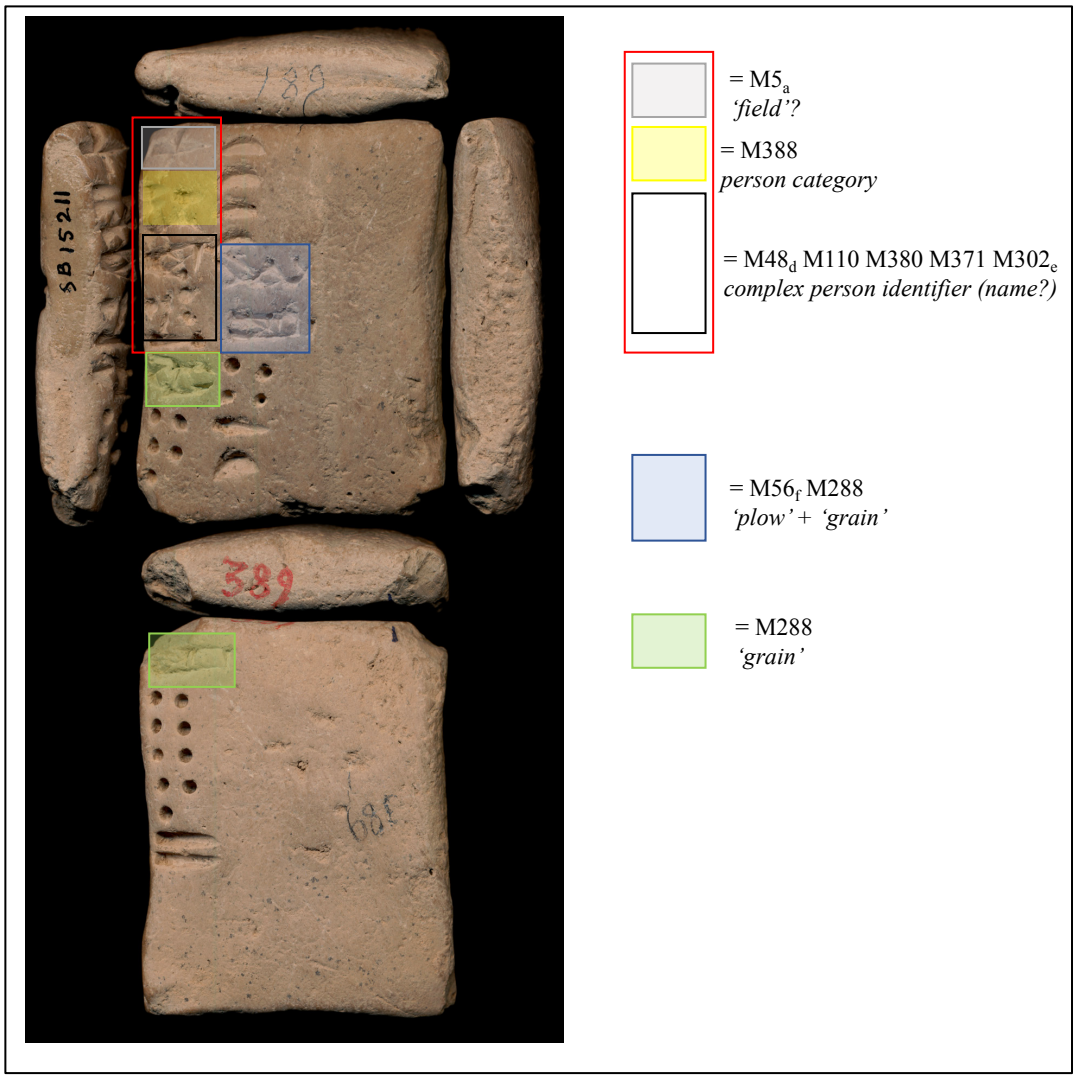


Figure 5.35: The summary of text MDP 6, 389 adds the grain associated with an M388-individual to the grain under the designation M56 M288 'plow grain' to make the total on the reverse under the sign M288 'grain'.

Like the Sumerian engar, 'farmer'; however, the comments above regarding our poor understanding of account time-frame caution against any conclusions about grain amounts and status.

The use of the 'plow' sign M56 has been taken here as a marker for accounts relating to agricultural resources and work[85]. It is known overall from seventy-two proto-

[85] M391 is another sign that may indicate agricultural fields; it is used in around 25 texts, including the possible 'harvest yield' text above.

Elamite texts, frequently occurring in the headers of short texts (as in the seed-plow genre). Damerow and Englund (1989a) had proposed that M56 might stand for 'a known unit of work or even field measure'. In various texts, it is often followed directly by the capacity measure designation sign M288, and in other cases directly by a capacity system notation —M56 may carry different meanings in each of these two uses. In addition to the above texts, some unusual contexts with M56 are not understood[86].

Summary

The above discussion shows that, on the one hand, there is significant evidence to suggest that proto-Elamite texts sometimes recorded humans in contexts that have closest parallel to work groups in proto-cuneiform and later cuneiform administrative texts; On the other hand, many of the sign uses and contexts remain difficult to understand in this light. The possibility that some or even many of these signs referred to animals (such as bovines or equids) cannot be dismissed, although the apparent human referent in the sign M72, and the 'named' contexts for M388, would suggest these signs can also refer to humans. Like in proto-cuneiform, a large number of texts in proto-Elamite appear to track grain distributions in unclear contexts; *unlike* in cuneiform a variety of texts can be shown to count the 'worker' signs, or groups of workers with grain disbursements in a repetitive manner similar to later third millennium cuneiform rationing lists, and to consistently associate a standard amount of grain ($15N_{30c}$) with each counted worker.

[86] For example, simple receipt MDP 17, 441 (fig. 5.34d) records 3 M56 (three standard-sized fields?) and M288 ('grain') plus a numerical notation that defies the bundling principles of the sexagesimal system as they are currently understood. On the reverse is a tally of 11 M367 (male goats).

Chapter 6a: $KUR_{a\text{-}g}$ in proto-cuneiform

Introduction

This chapter explores the use of the KUR_a[87] sign as a category of human in the Uruk IV and III texts. KUR_a is used to represent both 'male' and 'mountain' in different proto-cuneiform contexts. Following Thureau-Dangin (1929: 271 ff.)[88], it is commonly accepted that the element KUR_a referred to 'mountain/foreign land', and when added as a qualifying adjective to the sign for 'male' or 'female' (NITA or SAL), the resulting combination 'foreign land/mountain + man/woman' indicated 'slave' because slaves were often taken from foreign lands[89]. However, due perhaps to the difficulty in understanding proto-cuneiform texts, most Assyriologists subscribing to this interpretation do not venture to establish whether or not this etymology applied to the various proto-cuneiform uses of KUR_a.

The two exceptions are Vaiman (1989) and Englund (1998, 2009). Vaiman's analysis of the proto-cuneiform material resulted in a conclusion closely resembling Thureau-Dangin's etymology, while Englund (2009: 6) proposes an alternate understanding of KUR in proto-cuneiform (see below), but cautiously repeats the idea that an *Early Dynastic* etymology for slaves might indeed be 'mountain men/women', which is supported by 'ample textual justification'.

[87] KUR is known in forms a, b, c, d and g (see below), but uses of the other forms are very limited and general discussion assumes the use of KUR_a.
[88] Though see already Delitzch 1897: 99.
[89] e.g. from Falkenstein 1936: 30 to recently Glassner 2003:143 and Molina 2011: 562

In attempting to establish that KUR_a in proto-cuneiform could be used *without* the additional 'male' sign NITA with a basic meaning 'slave', Vaiman (1989: 128, and similarly Uchitel 1984: 262[90]) claimed also that there was *no* other use of the sign KUR_a except 'slave' in the Uruk IV or III texts. This is disproven here by a number of proto-cuneiform texts, including several from Uruk that had not yet been published at the time Vaiman was writing, which clearly show the sign acting as product designations, place names, titles and personal names, and other unclear contexts.

This chapter shows through examining all known uses of the sign that KUR_a was only rarely employed as a sign to represent a male human and many more times in other ways, probably associated with the meaning 'mountain'. Addressing the reasons for a possible multivalency in the sign KUR_a is dependent upon further decipherment of proto-cuneiform accounting practices. The different ways that KUR_a was used in proto-cuneiform may provide clues about the social position of human males represented by the sign, which has since Vaiman been understood to represent a lower class male worker, slave, or other 'subjugated man' (Zsolnay and Westenholz 2016:15).

Mountain and/or Man?

In proto-cuneiform the sign KUR_a standing alone could sometimes indicate 'male' or 'man (of a certain social identity) (Vaiman 1989). This writing did not survive into

[90] So Uchitel: 'the traditional 'etymologising' of the signs SAL + KUR and NITA + KUR as women and men from a foreign country is doubtful, because the earliest attested meaning of the sign KUR in pictographic script was 'man of certain status', and not 'mountain' or 'foreign country''.

later cuneiform; instead, the combination of signs ARAD/NITA[91] and KUR_a– a form of which is known already from the Uruk III period, but only in a handful of uncertain contexts (see below) – was used from the ED I texts onwards, to represent 'male servant, slave'[92]. In proto-cuneiform, the corresponding sign to NITA is ZATU 604, to which Green assigns the names UŠ and NITA. While KUR_a of proto-cuneiform texts (and *not* ZATU 604.KUR_a) parallels later NITA.KUR or indeed NITA in its use in labour contexts contrasting with SAL(.KUR_a), it is not known to what extent proto-cuneiform KUR_a implied a similar social group to Early Dynastic NITA.KUR and NITA[93]. A close understanding of the social significance that the designations KUR_a, ZATU 604 and ZATU 604.KUR_a held in the late Uruk/Jemdet Nasr periods may be unattainable, however this chapter seeks to clarify the available evidence and perhaps as significantly, what we do not know.

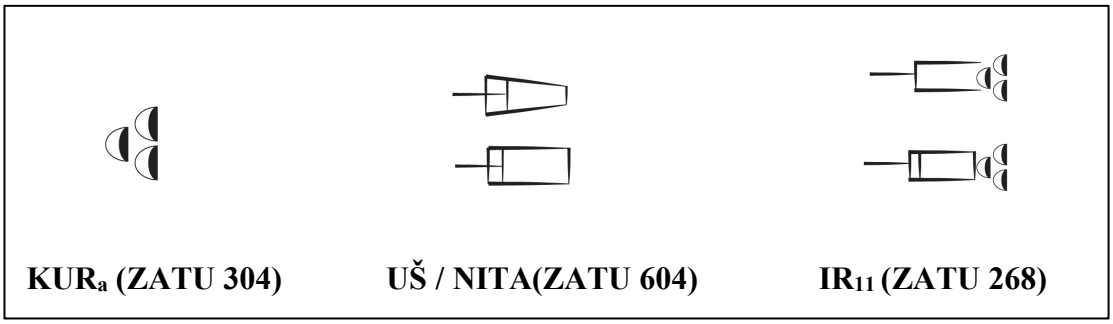


Figure 6.1: Both KUR_a and ZATU 604 are understood to represent the male sex for humans in different contexts. Their combination (ZATU 268) appears to be used as a personal name.

[91] See Bauer 1989: 79 for an explanation of the confusion in modern transliteration conventions surrounding this sign as its development is tracked across the third millennium. The naming convention for this sign for Old Babylonian texts becomes ARAD (with a value $nita_2$), with ARAD x KUR = $ARAD_2$ (Mittermayer 2006: 8). See Gelb 1982: 96 for a summary of the Fara through Ur III period paleography of the sign there called NITA with several variant forms. For this dissertation, ZATU 604 is used in reference to archaic texts, and NITA for other third millennium texts, following Gelb.

[92] The Sumerian readings of this sign combination are uncertain. Gelb argued that Sumerian ir_{11} was an older, native word for slave, and that the reading $arad_2$ for the same combination (ARAD.KUR) was a younger word in Sumerian, borrowed from a Semitic language. For an alternate view and discussion, Krecher 1987.

[93] Although Glassner (2003:248 n. 25) makes a straight-forward equation between the two: 'The sign $ARAD_2$ (ARAD + KUR) to indicate 'servant' or 'slave' is only attested from the Uruk III period on. Before that [i.e. in Uruk IV texts] the KUR sign on its own indicated the male servant'. His statement fails to consider the continued use of the KUR_a sign 'on its own' to indicate a male worker in the Uruk III texts, as well as the differing contexts in which 'ARAD + KUR' (= ZATU 604.KUR_a) and KUR_a are used in the Uruk III texts.

Vaiman (1989) was the first to explicitly address the meaning of KUR_a in proto-cuneiform. Expanding on the suggestion by Thureau-Dangin, he suggests that the KUR_a element in ZATU 604.KUR_a should be understood to hold a meaning related to a later Old Assyrian and Old Babylonian Akkadian value *kišittu* ('booty, prisoner of war' (CAD 8: 451) – so that one should understand the texts to involve males and females that were captives of war or plundering activities[94]. Having correctly identifying that archaic KUR_a could stand alone as a counted object in parallel to SAL, however, Vaiman remained ambiguous about the connection between the meaning 'booty, captive' and the generally accepted idea that the sign pictographically represents 'mountain'.

In addition to establishing the function of KUR_a as an object in contrast to SAL, Vaiman also argued that SAL on its own, particularly if used in tablet contexts relating to KUR_a, could be an 'abbreviated' form understood as '[captive] female'[95]. Vaiman was also the first to prove through account formats that the combination SAL.KUR_a could in some instances represent 'mixed males and females'. He also argued that by the Uruk III script phase, the sign combination SAL.KUR_a already had changed to represent only a single female of the KUR_a designation, along the lines of later SAL.KUR_a; however, the only two Uruk III texts in which the numerical notations are such that SAL.KUR_a must apparently be understood as a single individual[96], do not provide enough evidence on which to build chronological

[94] In fact the value 'booty, plunder' was probably also expressed by the ideogram for 'mountain' along the same principles outline in Thureau-Dangin's suggestion, so that Vaiman's proposal does not stray far from his original idea. While not cited in Vaiman's article, a similar suggestion had originally appeared in Delitzch (1897:93) that sought the origins of the combinations NITA.KUR and SAL.KUR in a meaning of 'captured human' through the root *kašādu*, a much later value of the sign KUR.
[95] A comparable practice of livestock bookkeeping using a 'basic sign' for one sex of the species, and an additional sign as sex marker for the other, is discussed below.
[96] Related accounts MSVO 1, 213 and 214 (appendix 2.vi-vii).

distinctions in meaning. While wishing to retain the explanation of 'mixed males and females' over the possibly anachronistic former reading of 'geme$_2$' (established by Langdon 1928: 43; Bartash 2014), Englund admits that he cannot provide a satisfactory explanation for SAL.KUR$_a$ in these two texts (2009: 12).

While Vaiman made several important contributions to understanding archaic KUR$_a$, he was also limited by the availability of archaic texts and the state of knowledge at the time of his writing, leading him to construct arguments on faulty readings of signs (Damerow and Englund 1989b:138). Building on these advances, Englund noted the clear counter-positioning of SAL and KUR$_a$ in the Uruk IV–III texts, and developed the idea that the pictographic referent of the sign KUR$_a$ in labour texts may have been not 'mountain' but 'male sex organs' (1998: 155)[97], just as SAL is known to represent the female pubic area. In support of this idea he cites the cases in which the sign appears to be used also for male livestock (see Green 1980), and he also draws on the parallel uses in proto-Elamite labour texts (Damerow and Englund: 1989a). In this way, KUR$_a$ and SAL are shown to stand as opposing signs for male and female animals or humans respectively, and are described as 'lower-class humans', 'workers' or perhaps 'slaves'. This has become the standard interpretation of the proto-cuneiform signs.

A somewhat different position was held by M. Lambert (1968a : 410, 1968b : 200), who suggested that '…les deux mots composes FEMININ + KUR et MASCULIN + KUR, antérieurement à leur utilisation au sens d'ouvrier et ouvrière, étaient employés

[97] Gelb (1982: 81) had already stated that there was 'clear evidence' in proto-cuneiform suggesting that KUR$_a$ referred to 'male' instead of 'mountain' in proto-cuneiform, but did not expand on the implications to Thureau-Dangin's analysis of the sign combinations NITA.KUR and SAL.KUR as 'male +mountain' and 'female + mountain'.

à designer, de façon noble, le serviteur ou la servant d'un dieu ou d'un prince' (1968a : 410). According to Lambert NITA.KUR and SAL.KUR should be understood as 'originally' referring to men and women associated with a temple platform indicated by KUR (such as the e_2.kur), as he sees it, individuals with a relatively high social status. Incidentally, he correctly referred to the 'original' signs for labourers as simply 'male' and 'female', although presumably referred to NITA rather than $KUR_{[a]}$ for male, and his entire line of explanation relies on only the ED IIIa texts from Šuruppak and following ED IIIb texts to trace this 'development'. Lambert's idea hasn't been generally accepted, and the standard interpretation of the 'slave' list from ED I–II Ur (UET 259, already known by Burrows: 1935) argues against the hypothesis that NITA.KUR and SAL.KUR combinations only came to represent lower class humans in the time of Urukagina. However, while there is little reason to suggest that the NITA.KUR of the proto-cuneiform or ED I–IIIa texts were of 'higher status', the sign combination was clearly used in early texts as an element in personal names, as sometimes known in later Mesopotamia; for the Early Dynastic texts from Ur, Burrows (1935) recognized a personal name 'ARAD-lugal' (UET 128). In fact, for the proto-cuneiform texts the sign combination $NITA.KUR_a$ was not used in the standard labour bookkeeping contexts, but instead appears to represent personal names in perhaps all instances.

The sign name KUR is applied following convention, with /kur/ representing the most common Sumerian[98] word for 'mountain' attested in all periods, and 'foreign land',

[98] Rubio (1999:10) dismisses attempts to trace an Indo-European homeland via supposed lexical correspondences between Sumerian and Indo-European languages. However, he lists a number of proposals by others, including a suggested link between Sumerian kur and Afroasiatic lexemes (by Militarëv 1995:73-85), or Sumerian kur and Hittite hekur 'top of cliff or mountain' (suggested by Gamkrelidze and Ivanov 1995:573–74, 773). Rubio doesn't make specific philological counter-arguments to these comparisons which he considers 'unlikely', but concludes generally that the

contrasting with ‘kalam’ as native land (Gadotti 2014: 15). The similarity between the Sumerian word kur_2 ‘hostile person/enemy’ (wr. PAP) and kur ‘mountain, foreign land’ have been noted, but their precise lexemic relationship is uncertain (Geller 2000: 45 n. 39; Steinkeller 2007: 231; Zsolnay and Westenholz 2016: 32, n 7). KUR has a number of values as a logogram in later periods of cuneiform. Horowitz cites kur as ‘the ordinary name for the underworld in Sumerian [literary] texts’ (1998: 272) alongside several other terms. Names of the cardinal directions are also known from the names of the ‘four primary winds’. ^{IM}KUR.RA (Akk. ^{im}*šadû*) is the Sumerian term for the east wind, as a reference to the wind coming from the Zagros mountains to the east and north of Sumer (Horowitz 1998: 196–7). The later Sumerian conceptual links between ‘mountain’, ‘foreign land’ and ‘east’ have all played a role in the suggestion that KUR_a as an element in NITA.KUR_a stands for slaves, some of foreign origin.

Could there be an explanation for the use of the sign KUR_a for ‘mountain’ and as a sign for ‘male’ or ‘man’ that doesn’t imply a conceptual link between the two? An explanation through rebus is possible but may be untraceable, especially if there were influences from an unknown language in proto-cuneiform (Englund 2009: 7 ff.). One could alternately argue that no conceptual or rebus explanations need be sought, as the multivalency of the sign could be explained through the flexibility in interpreting the sign-form alone, which could ‘resemble’ either mountains or male sex organs. But in fact the remainder of the chapter establishes that most uses of proto-cuneiform $KUR_{a\text{-}g}$ can be understood in context to relate to mountainous or foreign products or

existence of ‘look-alikes’, or alternately of shared Kulturwörter or Wanderwörter are difficult to assess, and that quite often when there has been sharing, the direction of this sharing cannot be established. However, he does note that the most plausible Indo-European and Sumerian links are made with Hittite.

animals, and concludes that KUR_a is indeed likely to represent humans 'come down from the mountains' or from regions described as KUR_a.

Other signs for (male) workers in proto-cuneiform

KUR_a appear to represent counted humans in only a small number of proto-cuneiform texts, and it is presumed that very many more male individuals were recorded in proto-cuneiform in different ways; male humans may have occasionally been marked explicitly with the sign NITA/ UŠ, but more often men were probably referred to with other signs, some of which may have been ambiguous with respect to gender or which implicitly indicated gender—for example, was an EN (never occurring with NITA) always male unless marked as EN.SAL? The sign GURUŠ may represent male workers in some instances, though the sign itself may be gender-neutral. Similarly, occasional uses of SAG may relate to low class workers, primarily the simple text from Kish, MSVO 4, 74 (Zsolnay and Westenholz 2016), where the sign is used in conjunction with GURUŠ and UŠ / NITA to record what may be three (named?) male workers (fig. 6.10). LU_2 is infrequently used in proto-cuneiform, and the texts offer little evidence on its meaning, although by later cuneiform parallel this sign again may be functionally gender neutral (Gelb 1965: 86) and of 'higher' status (Zsolnay and Westenholz 2016: 18). It is known in a few combinations repeated a handful of times, including LU_2 MUD_{3d} which could refer to individuals involved in ale production (Zsolnay and Westenholz 2016: 18) and with the 'fish' designation KU_{6a} LU_2.

Paleography of KUR

Proto-cuneiform KUR (=ZATU 304) is easily identified with later cuneiform KUR, however the sign form underwent some changes in the third millennium. Two major features of the KUR sign in the early texts are discussed here– the choice of writing implement used to render the sign, and the orientation of the sign. There is no discernible difference in distribution of forms of KUR between texts from the main find spots Uruk and Jemdet Nasr or of unknown provenance, and the corpus is therefore discussed together.

Stylus point

In proto-cuneiform, the three impressions forming the sign are made with a flat stylus tip, the same as is used for the numerical notations N_1 and N_{14}[99]. This stylus tip is rarely used for non-numerical signs in the proto-cuneiform writing system, and the effort expended in creating the sign in this way is noteworthy. This is echoed also in the proto-Elamite script, in which M388 is similarly rendered with a rounded stylus used for numerical signs—although in proto-cuneiform a greater number of non-numerical signs also incorporate this 'rounded' stylus impression. Proto-cuneiform KUR_a seems closely related to the form of 'mountain' images on cylinder seals and may reflect a relationship between scribal and seal-carving traditions (e.g. Ross 2014). The stylus was usually impressed obliquely producing three semicircles, and in a few instances straight on producing three full circles (e.g. in W 14275. See the forms of ZATU 304). The circular form also appears in two of the 'early kudurrus'

[99] In ED I–II texts from Ur, numerical notations were made with either a similar stylus, or sometimes a 'rectangular' (e.g. UET 2, 34) (Chambon 2003: 3).

(OIP 104, 11, *Blau plaque*; OIP 104: 7, *Leiden Tablet*); while in two other early stone documents (*Ušumgal stela* OIP 104, 12, and OIP 104, 14) the KUR sign imitates forms made with the wedge-head of a stylus as known from later periods (see 'Early Dynastic IIIa' form in figure 6.2).

The practice of executing the KUR sign with a blunt, round stylus end continues sporadically in the Early Dynastic texts. However already in a few instances in the Early Dynastic I–II texts from Ur (UET 2, 298) as well as comparable documents in private collections (OIP 104: 12 and 14), and increasingly with the EDIIIa texts, the normal wedge-head stylus is often used for the three elements of the KUR sign. For the rendering of numerical signs as well, the blunt stylus was replaced by wedge-headed stylus over a long period of time, finally settling on the wedge-head only during the Ur III period (Nissen et al. 1993: 140).

Orientation of the sign

The second main feature is the orientation of the sign. Green's list failed to separately label two differently-oriented forms, but the sign list provided in Englund (1994) offers designations for these as KUR_a and KUR_b (fig. 6.2)[100]. Following the same orientation of other signs that depict objects like SAG 'head' and KAŠ 'ale jug', the form KUR_a appears to depict a mountain. This orientation corresponds also to that of scenes on late Uruk and Jemdet Nasr period seals from Mesopotamia and from proto-

[100] The CDLI also adds rare variations c,d, and g. KUR_d  appears in one unpublished text from private collection, MS 4530, a small pierced tag. ATU 3 includes a form KUR_c:  attested only once, in the entry GIŠ KUR_c in the lexical Wood W 21418,5.

Elamite Iran, where three lumps form a 'mountain' motif sometimes topped with vegetation or rearing caprids (chapter 3). KUR_b, on the other hand, is 'upside-down' (fig. 6.2). This 'flipping' of orientation is a typical kind of variation in early writing systems (Gelb 1963: 22), and is to be expected in the formative period of a script. However, KUR_b is very uncommon. Of the only three uses of KUR_b in Uruk IV texts[101] only one of these (W 20044,26) appears secure. In this text the sign appears in the entry A KUR_b and a large numerical notation $2N_{48}$; the sign combination may represent a personal name (such as sum. Kur-a) associated with a large distribution of grain. In Uruk III texts, KUR_b appears only in three witnesses of the lexical list *Vessels*[102], while KUR_a is used about 175 times across the corpus. With so few attestations, it is not possible to tell if the two forms were in fact intended as separate signs as were proto-Elamite M381 and M388.

Beginning with the ED I texts from Ur, and the so-called 'Blau Plaque' (OIP 104: no. 11)[103] and proceeding into the Fara and Abu Salabikh texts, the orientation of the KUR sign is that of KUR_b, perhaps surprisingly considering its rare attestation in the proto-cuneiform texts. This orientational similarity to KUR_b is the case in Early Dynasty texts both when the blunt 'numerical' stylus end is used[104], and when the wedge-head is used and the sign adopts a 'diagonal' orientation that also appears derived from KUR_b[105].

[101] W 10992 ; W 20385,2 ; W 20044,26
[102] and one possible administrative attestation which is uncertain, in unprovenanced text MS 2350. In this text, $SAL.KUR_a$ and $SAL.LAM_b$ are also used.
[103] There is one possible use of KUR_a also in the miscellaneous stone documents published in OIP 104. Text no. 7, a black stone tablet, of unknown origin uses KURa there and appears to be used in the combination NITA.KUR, although the NITA is mostly broken. Gelb (et al. 1991: 36) consider this document to represent 10 female (SAL.KUR) and 8 male (NITA.KUR) 'slaves' either attached to an agricultural property as workers or given as the price of the property.
[104] Excepting in UET II sign no. 121, the ligature LAM + KUR_a.
[105] see LAK 461 (Deimel 1923); e.g. Martin 2001: 105 no. 558, ^{d}nin-kur

This pattern of transmission is difficult to interpret. It may be noteworthy that the lexical tradition alone uses the form KUR_b in the Uruk III texts. Lexical texts are known to be particularly conservative and may have served to pass on the sign-form into later cuneiform; however the lexical *Wood* also uses KUR_a as does one witness of *Vessels*. One could suggest that the reason KUR_b was used in some cases in the lexical *Vessels* was that the three elements of the KUR sign fitted into the vessels shape DUG more easily in the orientation of KUR_b. The Abu Salabikh version of *Vessels* again use KUR_b (Biggs 1974: text no. 4) as well as using KUR_b consistently across the rest of that corpus. In short, evidence is lacking to prove whether KUR_b is an archaic continuation or an innovation due to some unknown factor, for example related to efficiency in the writing system and/or loss of necessity for the sign to visually depict a 'mountain' as did KUR_a.

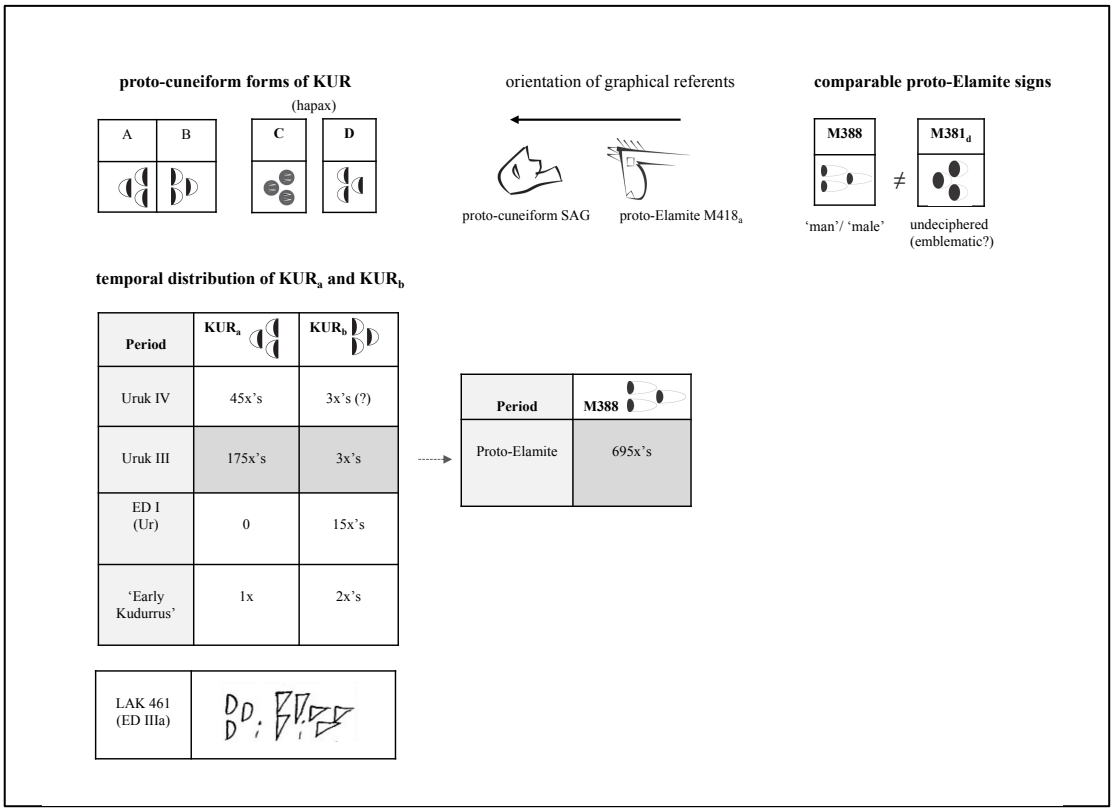


Figure 6.2: Orientation of proto-cuneiform KUR_{a-b} and Proto-Elamite M388, and approximated number of attestations of forms of the sign KUR.

The picture of scribal transmission is incomplete unless the proto-Elamite evidence is also discussed. Proto-Elamite used M388 which resembles the sign KUR_b (not KUR_a)— the form of KUR that is hardly attested in the proto-cuneiform texts contemporareous with proto-Elamite. Although M388 contrasts with M72 in a small number of uses, leading to comparison with KURa and SAL in proto-cuneiform, the orientation of M388 does not suggest that this human category sign was related to the idea of 'mountain' in the proto-Elamite texts since it would appear 'upside down' relative to signs representing identifiable objects[106]. Instead, a separate series of signs M381–385, not representing worker categories in the proto-Elamite script, resemble either KUR_a or LAM_{a-b} and may depict mountains (chapter 6b). Conventional dating of the proto-Elamite texts would suggest that M388 was borrowed from a tradition related to the (albeit rarely attested) Uruk IV KUR_b writing[107], but until further clarification of the chronological relationship between the proto-Elamite and Mesopotamian texts, this is uncertain.

Variants and closely related signs

$3N_{57}$ as a variant form of KUR_a

While the wedge-head writing doesn't appear in known Uruk IV and III texts (contra Green and Nissen (1987: 234), three parallel lines  drawn with the tip of the stylus were probably used in some cases instead, to render KUR_a in a tradition

[106] Although a few objects may appear 'hung on their sides' with respect to a proposed 'original' orientation of the script (e.g. the 'yoke' M54), most (including signs thought to depict vessels and most animal heads) appear in the same orientation which is considered here 'upright'. See Meriggi 1971 for the standard interpretation for orientation of the script.
[107] An Uruk IV period influence on Proto-Elamite is also indicated by other features of the proto-Elamite writing system (Englund 2004b: 124–127).

apparently limited to the Uruk IV and III texts (ZATU 146, Green and Nissen 1987: 200; Englund 1998:170 no. 392). These three lines are transliterated as $3N_{57}$, and in some cases may represent $EŠ_{16}$ (Green 1989: 200)[108]. $3N_{57}$ is frequently used in combination with signs that KUR_a is typically paired with: for example, the combination $3N_{57}$ SAL E_2 in the summary case of Uruk text W 24214,3 may compare with E_2 KUR_a SAL (CUSAS 1 no. 218). Other examples include: numerous uses of $3N_{57}$ NUNUZ (for KUR_a.NUNUZ, lapis lazuli); $3N_{57}$ AMAR (CUSAS 31, 19) paralleling AMAR KUR_a (e.g. CUSAS 31, 50); $3N_{57}$ PIRIG (e.g. CUSAS 31, 16) and KUR_a $PIRIG_{ba}$ $ERIM_a$ (MSVO 1, 213); and $3N_{57}$ NITA (W 9579,ds) for ZATU 604.KUR_a (see below). Finally, DUG_a $3N_{57}$ DIN (W 20831,1) may be a designation comparable to the administrative KUR_a DIN found in three Uruk IV texts.

The sign $3N_{57}$ is used already in the Uruk IV texts 28 times, so there is no evidence that it represents a development in 'abstraction' of the script. Both $3N_{57}$ and KUR_a can occur in a given text (W 9655,t, fig. 8.9a), including sometimes in the same case, showing that they are not likely to be simple variations in scribal hand. Instead, there may have been some tradition that guided the use of one sign or the other[109].

LAM_{a-b} (ZATU 328) and LAM+KUR/ $IŠ_{11}$ (ZATU 329)

Green and Nissen (1987) distinguished between two separate signs built similarly to KUR_a that they understand as related to later LAM; on the one hand, there is ZATU

[108] ZATU 146 , Green equates this sign with UET II:84 (Burrow 1935), and LAK 133/191 (Deimel 1923), but there is no indication that these later signs doubled as a writing for KUR.
[109] This situation may be similar to the choice of KUR rendered with alternately the blunt stylus or the wedge-headed stylus in Early Dynastic texts, as mentioned above.

328 (= 'LAM') in forms *a* and *b*[110] and on the other, ZATU 329, which they consider to be 'LAM+KUR', although this analysis is probably incorrect (Steinkeller 1995a: 703 n. 329). Figure 6.3 presents the naming conventions for the relevant proto-cuneiform signs provided by Green and Nissen (1987), Steinkeller (1995a) and the CDLI.

It is difficult to determine if the variants grouped under ZATU 328 all represent a single sign in the writing system. The *CDLI* adds a form with 6 stylus impressions and two sheaves of vegetation emerging – this appears in one text (W 19408,62) transliterated as $LAM_{b.s}$ (fig. 6.3). This form is particularly similar to some proto-Elamite types of variation on the related sign series M381–385, and highlights a possible 'emblematic' origin for both sign groups (see chapters 3 and 6b). Both these and Uruk IV and III cuneiform signs LAM_{a-b} and KUR_a appear loosely related to the glyptic tradition of depicting 'mountains' (or perhaps sometimes 'heaped' products), but in the writing system they adopted specific conventional meanings.

ZATU 328 variant *a* is attested in lexical texts and only two administrative texts. Uses of ZATU 328 variant *b* are more regular, and appear distinctive from uses of KUR_a. Two common combinations can be identified: LAM_b ZATU 795 (9 times) and LAM_b ŠUBUR (Archaic *Pigs*) – and once a ⌜ŠUBUR⌝ ZATU 795 LAM_b. Several Uruk IV receipts use the sign, with unclear meaning (e.g. W 9579,ae; W 9656,n1). Administrative uses of ZATU 329 (= KUR_g) are limited to the Uruk IV period, in

[110] LAM_b itself has a number of variations listed for the Uruk IV and Uruk III periods. The defining feature of Green and Nissen's 'LAM_b' is that all forms include more semi-circular impressions of the stylus than the three used to render KUR.

three texts[111], including an apparent title $SANGA_b$ KUR_g (W 9169,a). The sign is attested in the Uruk III period only in lexical texts.

Langdon (1928) considered sign no. 185 (= ZATU 328_b) in his list to be the 'original sign for mountain'. Later lexical evidence (Horowitz 1998:290) cites Sumerian lam and Akkadian *lammu* as terms for *erṣetim* (earth/netherworld), further suggesting the sign was understood as a pictograph for 'mountain' similarly to kur. Based on sign use, the proto-cuneiform writing system had established a functional distinction between the two 'mountain' signs KUR_a and $LAM_{a\text{-}b}$. Glassner (2003) suggested that the number 'three' may have been significant in the rendering of the KUR sign,[112] which is possible in light of the parallel with $3N_{57}$ —although LAM_a is also built on three stylus impressions.

Equating $LAM_{a\text{-}b}$ (ZATU $328_{a\text{-}b}$) and 'LAM+KUR' (ZATU 329) with later cuneiform signs is difficult. Lexical evidence exists in the two series *Vessels* and *Wood* (aka *Trees*), and suggests that proto-cuneiform forms of LAM and KUR_g in some cases referred to nuts or related products. In the sequence of *Vessels* from Old Babylonian Nippur[113] (fig. 6.4) the combinations $^{giš}LAM^{e\text{-}eš}$ and $^{giš}LAMxKUR^{la\text{-}am}$ each refer to a 'kind of nut', and the following entry kur gi_4-rin-$na^{x\text{-}i\text{-}ri\text{-}na}$ is uncertain. ^{giš}LAM x KUR (= $IŠ_{11}$, Borger 2004: 181) is translated in ur_5-ra = *ḫubullu* as *šiqdu* , *šiqittum*, and [*lammu*?] (all partially restored) (Hh III 61–4, Landsberger 1957: 98)– all meaning 'almond tree'. The evidence is not precise enough to determine which variations of

[111] Green cites four administrative uses of ZATU 329, but in fact W 15776,d shows a variation of $SILA_3$ instead.
[112] 'The sign KUR… which is written with three notches, indicates the idea of mountain, not as the sum of three units but as an ensemble. The question that arises is why it had to be the number three.' – to which he provides no further suggestion (Glassner 2003:141).
[113] SLT 11 / P227772 obv. ii 19'-20' (Velduis 2014: 78 fn. 131).

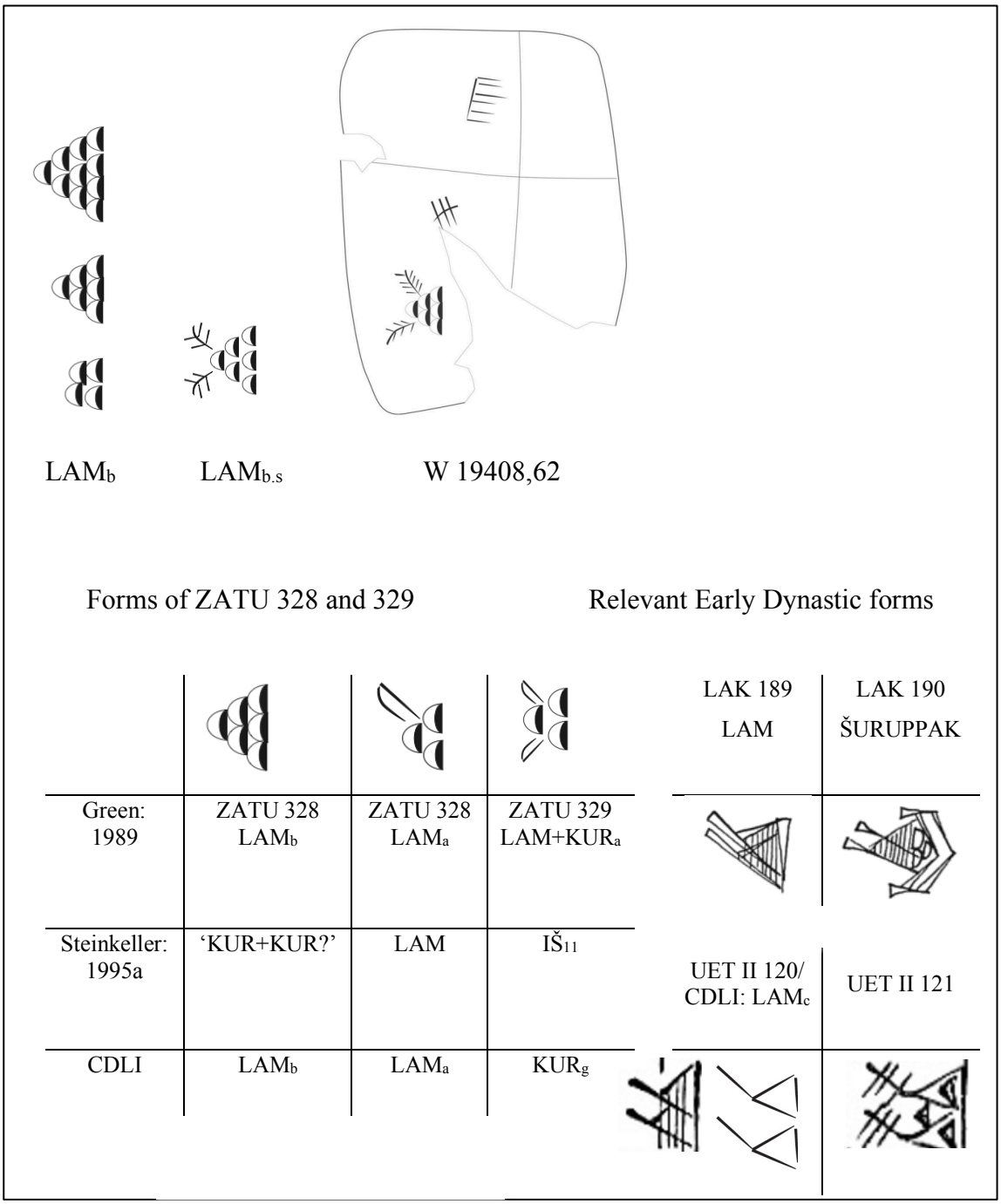


Figure 6.3: Above: Forms of the sign LAM$_b$ following Green and Nissen (1989), and a proto-cuneiform tablet inscribed with the sign. Left: Different modern transliterations of three similar proto-cuneiform signs. Right: Early Dynastic LAM appears to mix graphical features of ZATU 328 and 329.

ZATU 328 and ZATU 329 carried precise equivalents to later terms, since some proto-cuneiform witnesses are themselves not well standardized, and later lists are not always simply copies of earlier lists (Velduis 2014: 78). For example, despite the fact

that archaic *Wood* is one of the better-attested lists, there are few later third millennium sources and these remain difficult to match up, in part due to the apparent lack of standardization in the archaic version (Velduis 2014: 83–4). In any event, not all proto-cuneiform signs necessarily have a direct correspondence with a later cuneiform sign, and the meaning of signs may have shifted over time or been distorted through textual transmission.

Although it is difficult to say if the Old Babylonian scribes provided accurate glosses, the above evidence suggests that ZATU 329 and/or ZATU 328_a could have represented varieties of almond trees, pistachios (Old Babylonian wr. [giš]lam-gal, Akk. *Butnu*, often mentioned alongside almonds), or other kinds of nut-producing trees. Cultivation of almonds probably spread across the ancient Near East in the early Bronze Age as part of a general 'expansion of the fruit tree economy' (Potts 2012:199). Several varieties of almonds are known from the archaeological record in Iran, as well as pistachio which is particularly associated with the Zagros mountains (Potts 1999:38–40), suggesting that ZATU 328_a and 329 in these cuneiform designations referred to products introduced from areas to the east and north of Sumer.

Overview of the uses of KUR_a

Figure 6.6 makes clear that the sign KUR_a already appeared in a variety of contexts in the earliest phase of writing, with an increase in types of uses observable in the larger

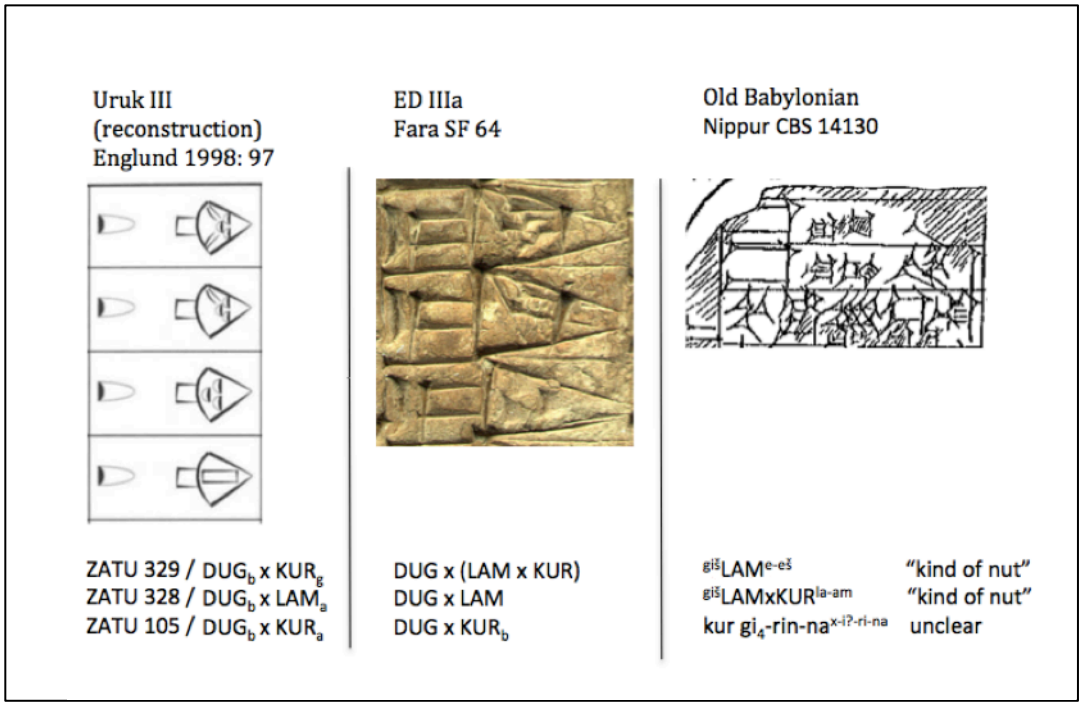


Figure 6.4: Lexical list 'Vessels', Old Babylonian translation following Velduis (2014)

body of Uruk III texts. It has not yet been established what role the KUR$_a$ sign played in most of these archaic combinations. Some of the less clear designations are the use of KUR$_a$ as a component in strings of signs that may be personal names, titles, or households as well as product designations. Frequently the texts are fragmentary, so that further interpretation is hampered. However, it appears it may have often indicated the origin of a product, person, or animal from the mountains (or perhaps a specific region); and in some cases it may have been used phonetically, although these uses are difficult to trace. Below in this section the uses of KUR with no immediate connection to male humans are reviewed, putting to rest any scepticism about the use of the sign KUR in cuneiform with meanings other than 'male slave' (contra Vaiman 1989:128; Uchitel 1984: 262).

About 225 (ca. 3%) of known Uruk IV and III texts use the sign KUR$_a$. The number of contexts in which KUR$_a$ was used expanded in the Uruk III period, but there are in

Source	Transliteration	Image
W 20327,2	1N$_1$ ⌜ALIM⌝ GIŠ 1N$_1$ GIŠ LAM$_a$ 1N$_1$ GIŠ KUR$_g$ 1N$_1$ [...]	
W 21108,1a	1N$_1$ ⌜ALIM⌝ GIŠ 1N$_1$ ⌜GIŠ⌝ KUR$_g$ 1N$_1$ ⌜GIŠ KUR$_a$⌝ 1N$_1$ DUR$_2$ GIŠ NUNUZ$_{a1}$	
W 21208,4	1N$_1$ [...] 1N$_1$ GIŠ LAM$_a$ 1N$_1$ GIŠ KUR$_g$ 1N$_1$ GIŠ DUR$_2$ NUNUZ	
W 22090,2 + 3 + 5 + 9	1N$_1$ [...] 1N$_1$ ⌜GIŠ⌝ KUR$_a$ 1N$_1$ GIŠ KUR$_g$ 1N$_1$ X ⌜GIŠ GIŠ ⌝ [...]	

Figure 6.5: Uruk III Sources for Wood, showing a lack of standardization

fact overall *fewer* clear cases of counted KUR_a humans (excluding $SAL.KUR_a$) in Uruk III texts than in the preceding smaller corpus of Uruk IV texts. At the same time, $SAL.KUR_a$ becomes a much more common designation in Uruk III period texts. This suggests that there was a stronger Uruk III tradition of bookkeeping associated with women of the KUR_a class than of men, which would in fact be in keeping with the long-held understanding that these signs can refer to slaves of foreign origins, with females taken in great numbers than males. Nonetheless, the number of texts with references to KUR_a and $SAL.KUR_a$ humans is small and the references are often ambiguous.

It is not possible to draw conclusions about variations in use of KUR_a between the sites. There are no major discrepancies, excepting that KUR in relation to equids isn't attested from the Jemdet Nasr or Uruk texts, but is well-known in unprovenanced texts (CUSAS 1 and 31 and unpublished Schøyen collection texts on the *CDLI*).

KUR_a and product designations

$KUR_{a/g}$ and $LAM_{a\text{-}b}$ are used in various product designations. KUR_a is associated with garments (TUG_2), breads (GUG_2), and tree or plant products. For some of these, it is assumed that the reference is to a foreign product, or product associated with the mountains. This is demonstrated by the use of the sign in designations for lapis lazuli, almonds or other nuts and possibly wine.

Englund (1998: 98) also proposed a phonetic use of the sign in relation to counted products, suggesting 'the sign KUR_a qualifying measures represented by N_1 […] is curious; it might denote a 'small mound' of grain, or have some other semantic or

Uruk IV uses from Uruk
(out of ca. 1860 Uruk IV texts)

Context of KUR	**Number of Texts**
Place names	
Šuruppak	4
(ERIM$_a$) KUR$_a$ KI (?)	1
Counted animals	
Male humans	13(?)
SAL.KUR$_a$ humans	3
Equids	1
Pigs (?)	1
Personal names/titles?	
E$_2$.KUR$_a$	1
EN KUR$_a$	1
(NUN$_a$)SANGA$_a$ KUR$_{a/g}$	2
KUR$_a$ SI	1
Product designations	
SILA$_3$.KUR$_a$	3
DUG$_c$.DIN KUR$_a$	1
(DIN) KUR$_a$	1
GUG$_2$ KUR$_a$	1
MAxMA KUR$_a$	1
use not determined	6

Uruk III uses from Uruk
(out of ca. 4870 Uruk III texts)

Context of KUR	**Number of texts**
Place names	
Šuruppak	45
See lexical below	
Counted animals	
Male humans	9
SAL.KUR$_a$ humans	22
KIŠ SAL.KUR$_a$ (?)	1
Equids	12
Sheep and goats	11
Cattle	3
Pigs (?)	4
Personal names/titles?	
E$_2$.KUR$_a$	14
NITA.KUR$_a$	7
(EN) (AN) KUR$_a$ HI MUŠ$_3$ =En ^{d}Inana-kur-dug$_3$ (?)	4
3N$_{57}$ MUŠ$_3$	8
KUR$_a$ U$_4$ URUDU URUDU	2
Product designations	
SILA$_3$.KUR$_a$	2
GI$_6$ KUR.NUNUZ	1
KUR$_a$.NUNUZ (='lapis lazuli', sometimes used in personal names?)	4
3N$_{57}$ NUNUZ (='lapis lazuli')	5
Lexical	
LU$_2$: KUR$_a$.DU$_{6b}$	4
Wood: GIŠ.KUR$_a$	5
Vessels: DUG.KUR$_a$	3
Metals: KUR$_a$.NUNUZ	1
Grain: KUR$_a$	1
Geography: KUR$_a$ KI	1
Unidentified : (various)	3
Other, use not determined	37

Figure 6.6: Overview of the KUR sign in Uruk IV and Uruk III texts. This list provides the number of texts in which KUR is used, rather than the total number of attestations of the KUR sign; some texts have multiple attestations, especially a few texts involving multiple SAL.KUR$_a$. The primary conclusion drawn from this list is that, contrary to previous literature, KUR did not always—nor even most commonly—indicate 'male' or 'male slave'. In addition, examples of possible 'male slaves' recorded with KUR were more numerous in Uruk IV texts than in the much larger corpus of Uruk III texts: both at under a dozen examples.

Phonetic /kur/ for /gur/?) meaning'. Later textual evidence might support this phonetic realization. Proto-Ea includes entry 447 ku-ur = KUR with variant gu-ur = KUR (MSL XIV: 49). In the Abu Salabikh 'Bird-Fish Contest' KUR is used as replacement for $buru_x$ (Biggs 1974: 62), and Civil (1973: 59) demonstrated an alternation in Sumerian between [b] and [g], sometimes [k].

Lapis Lazuli

Lapis Lazuli (sum. $Za\text{-}gin_3$) appears in Early Dynastic texts in the writing KUR : ZA = LAK 798 (Biggs 1966). In proto-cuneiform, too, the orthography is KUR.NUNUZ[114], and is probably also represented in $3N_{57}$.NUNUZ. The sign in proto-cuneiform might have been part of a diri writing, with the KUR_a element ideographically suggesting the mountain origin of this product, with no phonetic realization. In addition to the lexical use of KUR_a.NUNUZ in archaic *Metals* to refer to the stone lapis lazuli, the combination is used in a few administrative tablets in unclear contexts. In one case, we find the combination GI_6 KUR_a.NUNUZ 'dark lapis(?)'. This account (MS 2515) records different kinds of sheep on the reverse. The context might suggest the sign combination refers to a 'dark or blue-dyed wool', as known in Sumerian, (sig_2) $za.gin_3.na$ / Akkadian *uqnâtu* (*CAD* 20: 193). While on the one hand Waetzoldt (2010) suggests that textile dying may have been a restricted industry until the 2nd millennium, on the other, Algaze emphasized the availability of plants such as *chrozophora tinctoria* (which produces a blue-purple color) in Mesopotamia or Syria where 'Uruk-outposts' were located; since wool was more suitable for dying, he argues, this may have been one factor in encouraging the shift in

[114] Green and Nissen (1987) ZATU 423 is named 'NUNUZ, NA_4, NUZ, ZA_2'. See Steinkeller 1995a: 706–7 for the value ZA instead of ZA_2.

emphasis from flax to wool products in the late fourth millennium and the rise of a Southern Mesopotamian woollen textile industry (2008: 80).

Liquids

Uruk IV text W 20774 (unpublished, P004050) appears to count two different types of the product DIN:

$1N_{34}$ $1N_{14}$ DUG_c x DIN KUR_a	*70 jars of KUR-type(?) DIN*
$2N_{14}$ $4N_1$ $UNUG_a$ DUG_b x [DIN]	*24 jars of Uruk-type(?) DIN*

In another Uruk IV text (W 20907,2 fig. 6.7) the sign KUR_a represents a sub-category of DIN (ZATU 79). DIN itself has a later value $kurun_x$ (Van Dijk 1983:542) and might stand for 'wine'[115] (see archaic lexical *Trees* GEŠTIN and GIŠ+DIN+DIN, Green and Nissen 1987: 210), but this sense in the archaic administrative texts is not certain. The above-mentioned Old Babylonian lexical entry kur gi_4-ri-na (possibly for 'kurun'?) corresponds to archaic *Vessels* DUG_a $KUR_{a/b}$ and could suggest $KUR_{a/b}$ there referred to 'a plant related to the grapevine?' (Englund 1998: n 371). Early wine or grape product consumption is known from residue analysis of vessels from Godin Tepe in the central Zagros (Michel and McGovern 1993), and while wine was increasingly consumed in Mesopotamia throughout the third millennium, the grapevine was native and suited to the climate of surrounding regions (Joffe 1998:304). In text W 20907,2 (fig. 6.7), the summary on the reverse includes a count of 39 DIN and the designation NUN_a GA_a[116]. The 39 DIN are sub-divided into 33

[115] Green (1989: 44). Stol (1994: 165 with literature, 65 fn. 109) described *ku-ru-un* at Neo-Babylonian Nippur as a type of ale/ale, though primarily a 'literary word' at that time, and 'originally standing for a sweet red alcoholic beverage of high quality'; he notes it sometimes appearing in offering contexts.
[116] a reading /ganun/ (Sumerian 'storehouse') is possible and a 'wine storehouse' is a tempting translation of DIN GA NUN, (similarly Charvát [2014b: 177] for GA SANGA as a 'SANGA's

DIN and 6 KUR_a, corresponding to the obverse where 1 KUR each are marked out as sub-cases for each count of the other 6 signs (SAG, $LAGAB_a$ × UB, SAG again, MEN_a, UR_2, and AMA_a). This type of text may highlight the role of commensality in the archaic administration, but can only be tentatively interpreted at present. The use of NIMGIR SI, a designation in the first case also known from the Jemdet Nasr prisoner accounts MSVO 1, 212–213 (the SAG x $MA/ERIM_a$ accounts) suggests the possibility that the text relates to organization of a workforce after all—although the evidence remains too ambiguous to draw a clear picture of the text's content.

Obverse
Column 1
1. $1N_1$ NIMGIR SI
2a. $3N_1$ SAG
3a. $7N_1$ $LAGAB_a$ × UB
4a. $9N_1$ SAG
4b. $1N_1$ KUR_a
5a. $2N_1$ MEN_a
5b. $1N_1$ KUR_a

Column 2
1a. $1N_1$ NIMGIR SI
1b. $3N_1$ SAG
2a. $5N_1$ AMA_a
2b. $1N_1$ KUR_a
3. $1N_1$ EN_a
4. NUN_a DIN GA_a

Column 3
1. […] $2N_1$ $ZATU707_b$
2. $1N_{14}$ $3N_1$ $KAŠ_b$ $ŠE_a$

Reverse
Column 1
1. $3N_{14}$ $3N_1$ DIN
2. $6N_1$ KUR_a
3. $1N_{34}$ $1N_{14}$ $6N_1$ […] $ZATU707_b$
4. $1N_{14}$ $3N_1$ $KAŠ_b$ $ŠE_a$

Column 2
1. $3N_{14}$ $9N_1$ DIN NUN_a GA_a

Figure 6.7: W 20907,2. KUR_a as a product designation?

storeroom'?) but in later Sumerian (and probably in proto-cuneiform, e.g. Charvát 2014b: 171ff.) 'storehouse' is written with $ĝa_2$.

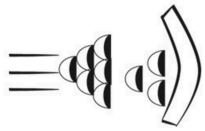
Geographic designations

Šuruppak

The city name Šuruppak is written KUR_a.RU in proto-cuneiform[117]. In a few Uruk texts (e.g. W 14804,a + W 14804,b) and unprovenanced texts (e.g. CUSAS 21, 182) it is written $3N_{57}$.RU. Šuruppak (modern Fara) is located about 50 km north-northwest of Uruk, and is known as early as the Jemdet Nasr period 'level 7', which was founded on top of a 'flood' strata. The city name was normally written SU.KUR.RU^{ki} in Early Dynastic texts, also the writing for the name of the city deity, $^{d}SUD_3$. The sign SU is probably a phonetic indicator relating to the goddess Sud_3 associated with that city (Krebernik 1998: 239). Jacobson (1969: 103) understood RU phonetically in the later spelling, reading 'su.ru.KUR^{ki}'. In proto-cuneiform the sign combinations KUR_a + RU and $3N_{57}$ + RU are listed together under ZATU 544 as the writing of Šuruppak and Sud_3. The presence of KUR_a + RU in three documents[118] dated to the Uruk IV period, probably relate to around the time the site had first been settled — in fact the excavators have traced the archaeological record back only to the Jemdet Nasr/Uruk III period (Martin 2012: 336) immediately following the end of the late Uruk period represented by script phase IV.

[117] Green and Nissen (1987) although Krebernik (1998) expresses skepticism over this reading.
[118] W 21209,2 + 3+ 4 + 7 ; W 21283; W 19412,3, all fragmentary, these contexts don't allow for comment on the type of interaction between Uruk and Šuruppak in the Uruk IV period.

Arata



The earliest definite attestation of Arata is from the Amaušumgal hymn from Ebla, with the spelling a-ri$_2$-da paralleled in Abu Salabikh text with LAM.KUR.RU (Mittermayer 2009: 27 ff.). Green (1980: 10 / Green and Nissen 1987:176) proposed a reading of Arata in proto-cuneiform for the combination analysed as '3N$_{57}$+LAM KUR+RU' (ZATU 35), found in a fragmentary administrative text W 20494,6 with a suggestive summary case 3N$_{57}$.LAM KUR.RU EN KA, which Green tentatively reads in Sumerian en arata-ka 'the lord of Arata' (1980: 17). Arata as it is known in later Sumerian tradition may be a purely literary place name (Potts 2004: 2), although it is possible that 3N$_{57}$.LAM KUR.RU represented a real (perhaps local) place name in the Uruk administrative texts (one that was distinct from KUR.RU), and that this writing was remembered in the later cuneiform orthography LAM × KUR.RU for Arata.

KA$_2$.LAM

Archaic *Cities* entry 12 is transcribed as 'KA$_2$+LAM' (W 20266,74), and the placename is also attested in around twenty administrative documents. The only known later witness of *Cities* that preserves this entry is Fara text SF 23 that provides the writing AN.AN DAG x KUR. The sign DAG is recognized by Green and Nissen (1987) under BARA$_3$ = ZATU53, and analysed as E$_2$ + KASKAL. The sign in archaic *Cities* 12 is closer in form to ZATU53 than to KA$_2$ (ZATU 275), so one could also read the proto-cuneiform designation DAGxKUR; a graphical analysis could also

produce the reading E_2 + $LAM_{b.šeššig}$ (see section f). The name of this city and its location have not been identified.

$ERIM_a$ KI and KUR_a KI

KUR_a may reflect an early geographic designator, perhaps similar to its later Akkadian use for *mātum*, in the case ERIM KUR_a KI of text W 10802. The object being counted in this text is unclear. $2N_1$ $ERIM_a$ KUR_a KI and other unknown designations (associated with 1–3 N_1 each) are summarized under the total 16 $BARA_2$. The use of the sign KI (ZATU 289) as a place determinative in the archaic administrative texts is uncertain, and at best irregular (Green 1977)[119]. While administrative uses of KI may remain ambiguous, the lexical *Geography* shows the sign appended to some (but not all) place names. In particular, the Schøyen collection witness MS 3173 (unpublished, P252184) includes over two dozen consecutive place names using the sign KI, that seem to prove its use as a place determinative at least in the lexical tradition. In this list, KUR_a KI and $ERIM_a$ KI are listed as two separate places, KUR_a KI in the entry following $ERIM_a$ KI. An identically written placename, ERIM.KI is known in later third millennium documents and is probably located in the area of Lagaš (Ebeling 1938: 470).

[119] Michalowski (1993: 120, 123 ff.) suggests that the sign AB originally meant 'city' and was associated with a hypothetical early Sumerian word for city, ki, as reflected in the use of AB in the archaic lexical *Cities*. By the Early Dynastic versions of the same list, the sign KI was used in place of former AB. Supposing AB held the Sumerian lexical value ki in proto-cuneiform texts, we are left with the question of whether KI also held this value—the text above appears to show one administrative use of KI as a place determinative.

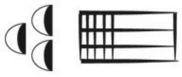
KUR_a in personal names or other proper nouns

ZATU 604.KUR_a = Ir_{11} (?) 

A sign paralleling later cuneiform NITA.KUR is included in the signlist by Green and Nissen (1987: 225) as ZATU 268 = 'IR_3', and the sign is understood there as 'UŠ + KUR'. This can be corrected to IR_{11}, if a Sumerian value is to be assigned at all, since the later sign combination NITA.KUR (=$ARAD_2$) is not ir_3 –rather, ir_3 is a reading of ARAD/NITA alone (Steinkeller 1995a: 704 n. 357; 1993). ZATU 268 (= ZATU 604.KUR_a) doesn't appear in any Uruk IV texts, but is used in seven Uruk III texts from Uruk and one from a private collection[120]. These are mostly fragmentary and difficult to interpret, but four[121] appear to use the combination as a name, title, or product designation, as evidenced by entries in parallel cases. For example, textile account W 20274,80 + 127 + 136 (fig. 5.21) includes a list of BA SIG_2 and BA TUG_2 (wool and garment 'distributions') that are followed by various naming or title sign combinations familiar from other texts. Along with BA TUG_2 IR_{11}, we find designations such as BA SIG_2 $3N_{57}$.NUNUZ and BA TUG_2 IB LA SUG_5 . The combination IB LA SUG_5 may be a personal name, title, or textile designation appearing in two other administrative documents, in both cases following the title SANGA ZATU 753. None of the uses of ZATU 604.KUR_a offer evidence to suggest it represents a count of male slaves, although this cannot be ruled out for all fragments.

[120] W 20274,152 ; W 20494,8 + W 20514,3 ; W 20274,18 ; W 20367,8 ; W 20494,18 ; W 20274,126; W 20274,80 + 127 + 136 ; and CUSAS 1, 7
[121] W 20274,152 ; W 20274,126 ; W 20274,80 + 127 + 136 ; W 20494,18

The pronunciation(s) of this name or title written with ZATU 268 in proto-cuneiform may not be recoverable. However, as well as being an element in many later Sumerian personal names, ir_{11} (wr. NITA.KUR) is also attested on its own as a personal name, for example in documents from Umma, Lagash, and Puzrish-Dagan (Limet 1969: 438)[122]. In CUSAS 1, 105, the sign combination ZATU 604.$3N_{57}$ ($3N_{57}$ appears to be an alternate writing for KUR_a) is included in an emmer wheat account recording varying amounts of the grain for each of the thirty individuals listed by personal name or title. That this text lists individuals by personal name is evidenced by the use of LUGAL, also attested as a personal name in the ED I–II Ur texts.

$E_2.KUR_a$ = ekur 

Nineteen archaic texts use the sign combination $E_2.KUR_a$ coming from Uruk itself, Jemdet Nasr, and of unknown provenance[123]. The proto-cuneiform contexts suggest this combination was used as a personal (or household) name, and the personal name e_2-kur is well attested in the third millennium. An e_2-kur-sikil is attested for a scribe in the Early Dynastic IIIa texts from Abu Salabikh (Biggs 1974:34). Limet suggests the name e_2-kur-ra (Ur III Lagash, RTC 399, III, 22) is an abbreviation of the name e_2-kur-he_2-gal ('the temple of the mountain is abundance') or is a name standing alone meaning '(he is) the Ekur (temple)' (Limet 1969: 206). E_2-kur is the name of Enlil's temple in Nippur[124] as well as other temples, and it forms part of a number of longer

[122] Limet suggested that ir_{11} may sometimes be a writing for the similar sounding Sumerian word ur (he reads 'dog'; 'hero') that is also common as element in personal names.
[123] CUSAS 31, 151; W 20422,1; W 17729, bo; W 20274,56; W 20274,64; W 20274,68; W 20274,94; W 20274,132; W 21733,2; W 24214,3 (?); CUSAS 1, 218; IM 023445,04; IM 134313; MSVO 1, 212; MSVO 1, 213; MSVO 3, 12; MSVO 3, 32; W 20274,32; W 20274,34; W 21209,1 + W 21209,6 (Uruk IV). In these texts the signs are consistently position in the form: 
[124] The e_2-kur temple in Nippur held such significance that Frayne (1992:31) suggests that in the 'Ur-Nammu Cadastre' the writing e2-kur functioned pars pro totum to indicate the city of Nippur.

temple designations such as e_2-kur.nam.ti.la 'House, Mountain of Life' (George 1993:116–17).

Significantly, this personal name also has an early link to the administrative elite of Uruk. The torso of a limestone statue, found at Tell al-'Ubaid[125] (WA 114206) bears a faint inscription reading:

1. e_2.kur	Ekur,
2. KA:GUR$_7$ unug.ki	superintendent of the granaries of Uruk,
3. ^{d}dam:gal-nun	created (4)
4.mu-du$_3$	a (statue of) Damgalnunak (3)
5. [e_2]-mu-ru$_2$	and built (her) house.

(Marchesi and Marchetti 2011:163)

Identified here as the KA.GUR$_7$ unug.ki – the 'superintendent of granaries of Uruk', the name is therefore not only linked with Uruk but also with the administration of grain. Ekur may have been a long-standing name among the administrative elite of the area, and may be plausibly suggested to appear in the Uruk IV/III texts which are overwhelmingly concerned with grain storage and distribution. For example, in proto-cuneiform text MSVO 3, 12 (possibly from Uruk) we find the case 2N$_{14}$ ŠE$_a$ BULUG$_3$ KUR$_a$.E$_{2a}$. A reading of this could be '2N$_{14}$ (ca. 360 litres) barley (of the barley) grown by e_2.kur'. Šarzyńksa (1993: 8) alternately considers archaic E$_2$ KUR to be a temple in Uruk. For many archaic cuneiform designations, it is difficult to determine if an individual or household is being represented.

MUŠ$_3$ KUR and 3N57 MUŠ$_3$ as designations for Inana

[125] of problematic date, suggested to be earlier than EDIIIb (Marchesi and Marchetti 2011: 66 n 187).

Two similar combinations can be discussed – MUŠ$_3$ KUR, used exclusively in the personal name at Uruk, and 3N$_{57}$ MUŠ$_3$ used in a specific Jemdet Nasr context as well as in one unprovenanced fragment (CUSAS 21, 284). Steinkeller (2002: 253 and n. 22) understands the two differently: MUŠ$_3$ KUR as 'Inanna of the mountains /netherworld' and MUŠ$_3$ 3N$_{57}$ as 'the "triple Inanna/deity of Unug" … the three forms of Inanna (identified by Sarzyńska [1993]) to whom offerings were regularly made in archaic Uruk: Inanna hud$_2$ (UD), "morning Inanna," Inanna sig, "evening Inanna," and Inanna NUN, "princely(?) Inanna"'. However, the use of 3N$_{57}$ in alternation with KUR in proto-cuneiform might suggest both designations are related. Marchesi and Marchetti (2011: 192 n 32) more recently have raised the possibility that proto-cuneiform Inana KUR might represent a 'male' Inanna, because of the known use of KUR for 'male' in archaic texts[126] (see also comment in Englund 1998: 197 n. 450). A goddess ^{d}Nin-MUŠ$_3$.KUR is also attested in the large Fara Godlist, with MUŠ$_3$.KUR referring to a mythological place also known in literary reference in Ur-Nanše's Diorite Plaque (CIRLPL 7, Urn. 49 ii 7). The term is conflated in some texts with kur-ZA.MUŠ, the name of the temple of Inana in Zabalam (Cavigneaux and Krebernik 1998: 474).

The combination 3N$_{57}$ MUŠ$_{3a}$ is found at the end of six Jemdet Nasr texts in an identical sequence[127] as summary lines for short lists of consumables; all of these texts share the famous 'city sealing' and have therefore been used in discussions of the nature of connections between early Mesopotamian cities (Matthews 1993; Steinkeller 2002).

[126] A 'male 'Aštar' (185 n 7), written INANA.NITA, is known from inscribed statues found at the Early Dynastic III temple at Mari thus dubbed the 'temple of INANA.NITA' (Marchesi and Marchetti 2011: 68-69), but no explicit link has been made between the archaic Inanna KUR and INANA.NITA.
[127] MSVO 1, 163, 165, 168, 172, 173 and 174

The repeated sequence is:

NI$_a$.RU
3N$_{57}$ MUŠ$_{3a}$
UNUG$_a$

An unprovenanced text probably from Tell ‘Uqair (MSVO 4, 15) also includes this sequence but replaces NI$_a$.RU with the probable ancient name of Tell ‘Uqair, Urum (Steinkeller 1980; Green 1986). Matthews (1993:38–39) has suggested that 3N$_{57}$ MUŠ$_{3a}$ might represent either an ancient city name or some other kind of institution, given its position between the writing NI$_a$.RU (probably for Jemdet Nasr) and UNUG$_a$ (Uruk). Another reading of the sequence and the preceding few lines might be ‘commodities (issued by) the city of NI$_a$.RU (= ancient Jemdet Nasr)/ Urum for the triple Inanna/deity of Uruk’ (Steinkeller 2002:254).

(EN AN) MUŠ$_3$ KUR$_a$ HI = En ^{d}Inana-kur–dug$_3$ (?)

Attested only at Uruk, Green and Nissen identify the personal name en-^{d}Inana-kur-dug$_3$, and note that this follows a naming pattern en-DN-dug$_3$ or en-GN-dug$_3$ in administrative texts (1987: 222). Similarly, Sarzyńska (1997: 109–10) interpreted this combination as a title, ‘the dignitary en of the sweet goddess Inana from kur’, with KUR interpreted as Inana’s mythological mountain birthplace. The relevant entries from the texts in figure 6.8 are:

Text	
W 19639,c	[...] MUŠ$_{3a}$ ⌜HI⌝ KUR$_a$
W 20274,344	N$_{14}$ 5N$_1$ EN$_a$ AN HI KUR$_a$ MUŠ$_{3a}$
W 20274,11	EN$_a$ KUR$_a$ HI MUŠ$_{3a}$
W 20274,242N$_1$	EN$_a$ MUŠ$_{3a}$ KUR$_a$ HI AN

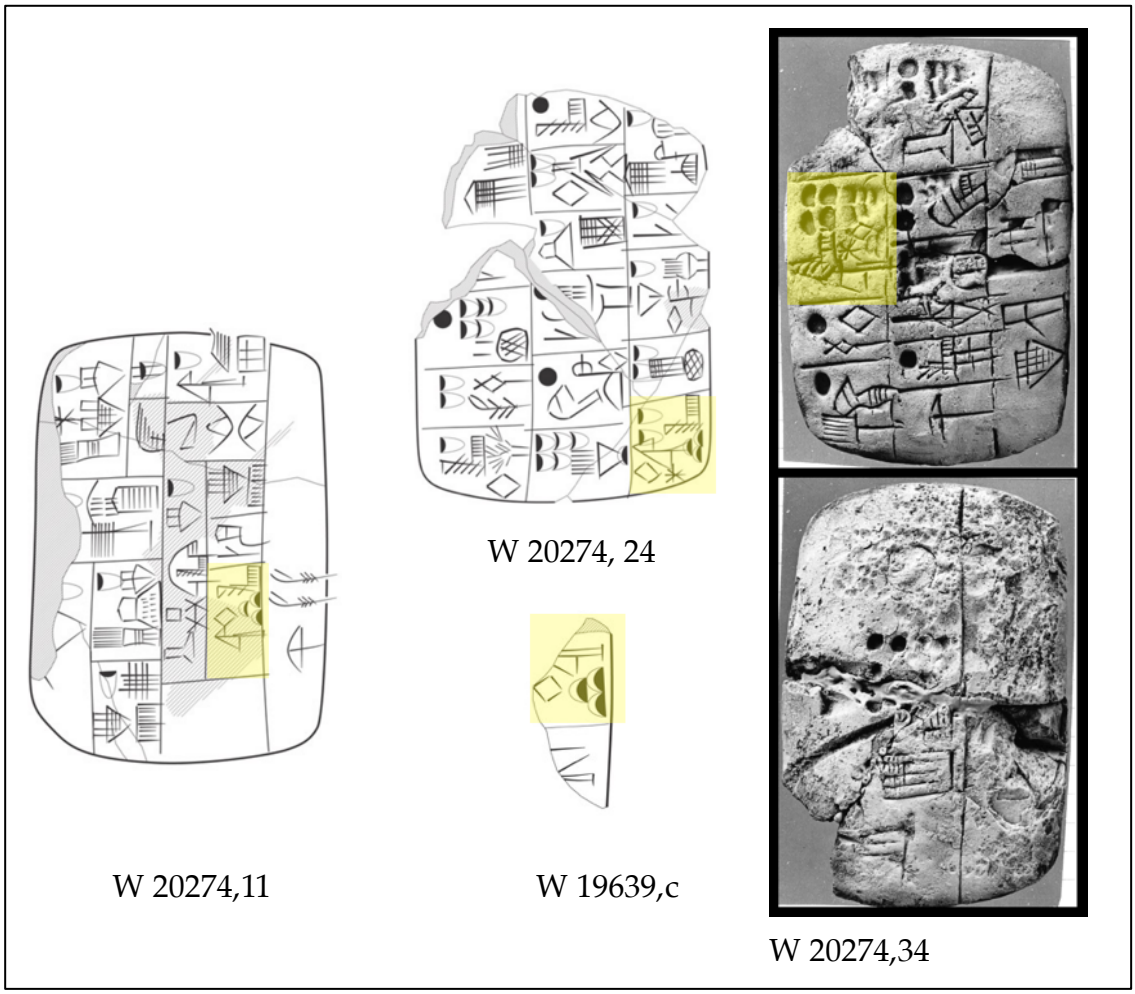


Figure 6.8 Proto-cuneiform texts including the designation MUŠ$_3$ KUR$_a$ HI

KUR$_a$ and other male sex-markers

This section reviews the signs used to indicate 'male' for animals in the archaic corpora in order to contextualize the similar use of KUR$_a$ for male humans. For both humans and animals, some ambiguity remains regarding whether KUR$_a$ indicates 'male sex' or implies a particular geographic origin for the animals or humans it represents.

There are different ways to mark 'male' animals in proto-cuneiform accounts, varying for each species and age. Throughout third millennium administrative texts, the sex of

animals can be indicated either by a basic animal sign with an added sex marker (e.g. $MAŠ_2$ constructed from MAŠ and the sex marker HI to express 'adult male goat'), or by a unique sign that may simultaneously convey sex, species and sometimes age (e.g. GU_4 and AB_2, adult male and female cattle respectively). The use of livestock signs varies between corpora or even between texts in idiosyncratic ways. Zarins (2014: 177) notes 'in later third millennium BCE usage the ANŠE sign *per se* can represent either male or female with the other sex then being specified when both genders occur in the same text, e.g. anše vs. anše-nita'. This highlights the importance of contextualization for understanding signs in cuneiform bookkeeping.

Gaps in knowledge

The first close study of sex markers in archaic livestock texts was conducted by Green (1980), who examined 46 sheep and goat herding texts and two cattle texts that formed a coherent group, defined by their tablet format and content. From these texts and lexical evidence, she produced the chart in figure 6.9. While livestock texts represent some of the best understood archaic contexts, the livestock terminology in Green's table fails to include the uses of the KUR_a sign to designate young male sheep and goats, though she recognized it to mark young male calves[128]. Sarzyńska (2002) also presented a list of livestock signs that is simplified and possibly misleading. For example, she lists 'UDU+NITAH' (=UDU.HI) as 'adult male sheep' but cites texts that clearly use UDU.HI.AŠ (e.g. p 17 figure 6.2), a sign which isn't included in her list, presumably following Green (1987) who included both forms under ZATU 578. It isn't known if these two forms carry the same meaning.

[128] See also Zsolnay and Westenholz (2016) who adopt Green's description of proto-cuneiform animal sex markers.

This section adds to Green's designations by pointing out the use of KUR_a for young sheep and goats as well as adult equids, and poses the question, 'how might the sign KUR_a as a sex marker relate to other male sex markers?' Some of the evidence for KUR_a as a sex marker comes from recently published texts of unknown provenance[129], however information from at least one Uruk fragment also conflicts with the presentations of Green (1980).

In CUSAS 1, 45 (fig. 6.9) the sign KUR_a is clearly used to contrast between female and male immature sheep in the consecutive combinations SAL.$SILA_4$ (=KIR_{11}) and KUR_a $SILA_4$, the latter instead of the combination $SILA_4$.HI.AŠ as expected from Green's table. In addition, Uruk fragment W 20572,1 offers an instance of SAL.MAŠ followed by KUR_a.MAŠ—whereas according to Green's study, we should expect EŠGAR and MAŠ for young female and male goats respectively (fig. 6.9). A further text of unknown origin MS 4492 (fig. 6.9) also includes SAL.MAŠ and KUR_a.MAŠ in a larger livestock context, confirming that these are designations for young goats in contrast to UD_5 and $MAŠ_2$ adults[130].

These examples show that KUR_a was used in some instances for at least three types of immature male animals: bull-calves, male kids, and ram lambs. On the other hand, KUR_a is not known as a sex marker for adult males of these animals. There is one possible exception in the appearance of UDU_a.KUR_a (adult male sheep?) occurring in a fragmentary text W 14777,e + W 14777,r1 ; however, here it might represent a

[129] CUSAS volumes 1, 21 and 31, and unpublished Schøyen collection texts available on CDLI.
[130] The ordering of the animal signs (U_8, $UTUA_a$, UD_{5a}, $MAŠ_2$) in MS 4992 is reflected in other texts, including the composition known as AD-GI_4.

breed of 'mountain sheep'[131]. KUR also exists in the combination AM KUR_a but is probably there also a non-sex-related designation for a wild bull (see Englund 1995: 47 n. 24). Unprovenanced texts also show that the sign KUR_a standing alone is used for adult male equids (see below).

Three types of 'male': HI, KUR_a, and NITA

As shown above, in proto-cuneiform at least two different signs can mark male sex when added to livestock signs– HI (in three variations: HI, HI.AŠ and HI.*gunû*) and KUR_a. Another sign, ZATU 604 (=NITA / UŠ)[132] is used with certainty only from the Early Dynastic Ur texts as a sex marker for sheep and goats, having replaced the previous HI element for male sheep and goats in proto-cuneiform[133]. The uses of ZATU 604 in proto-cuneiform are often unclear, but it may refer to male humans in a few cases (such as the $GURUŠ_a$ $UŠ_a$ $UŠ_a$ ['male workers'] in W 9656,l, fig. 5.1), and is used in many other unclear contexts. The rare appearance in connection with livestock signs includes once in the combination ZATU 753 ZATU 604 UDU.HI (W 9656,dm), and once GU_4 ZATU 604 (W 9656,ev). Since the HI element is already present to indicate 'male' in the first combination, the meaning of the added ZATU 604 is not apparent. Charvát (2012: 57) questions whether NITA can also be considered a sex marker for birds (W 9656,ac), however evidence is limited.

[131] 'the term udu-kur-ra appears already in an ED lexical text… written udu-kur. Cf. udu-kur-ra = *im-me-ri šá-di-i* in Hh. XIII 35' (Steinkeller 1995b: 67 n 74).

[132] Green distinguishes between ZATU 604 ('UŠ, NITA')  and ZATU 228 ('$GIŠ_3$')  while Steinkeller suggests that both are forms of the same sign.

[133] Because of this replacement, Green suggests HI and HI.AŠ could be 'precursor[s] of the sign NITA', and she provides names for the archaic signs ZATU 578 =UDUNITA, ZATU 483 SILANITA, and ZATU 357 MAŠNITA (or $MAŠ_2$). Steinkeller (1995a: 703) rejects these readings and palaeography, suggesting that while HI is clearly a sign indicating male, it is not a forerunner to NITA (which he says is certainly ZATU 604).

Charvát (2012: 57–68) suggested that the sign represented an 'abstract notion' of male sex as applied to animals as well as humans (57–58). He also suggested that as a human designation it referred to a class of manual workers described as 'cowboys'

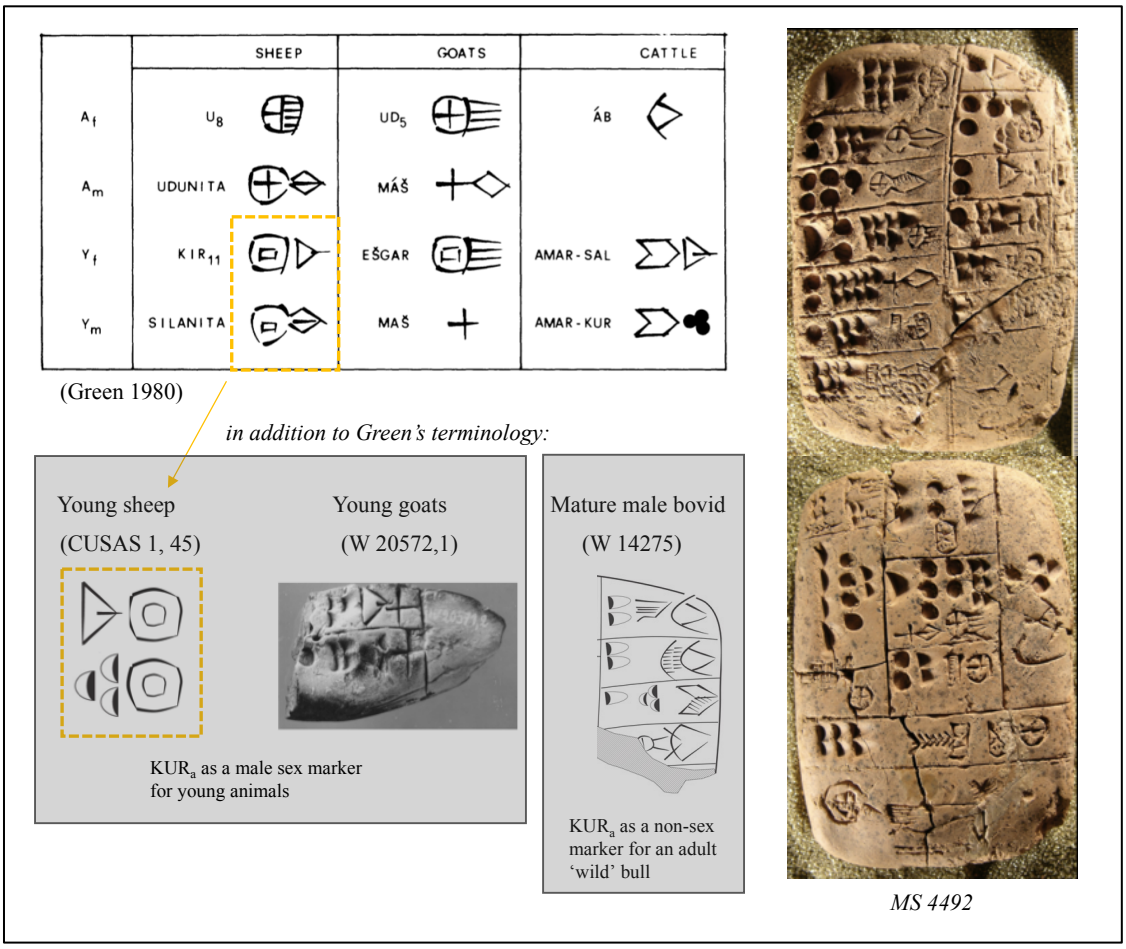


Figure 6.9: Above: Livestock classifications according to Green (1980:5). Middle: Alternate uses of KUR$_a$ in association with livestock. Below: Unpublished Sheep and Goat account MS 4492.

Comparable to *servi casati* of the Late Antique Mediterranean. There is indeed a correlation between UŠ and livestock accounts, but the use of UŠ as a worker designation in these texts remains uncertain; Charvát's interpretation of UŠ as (sometimes) representing workers involved in cattle herding can be cautiously accepted.

For livestock, possible distinctions in meaning between HI, HI.AŠ, HI.*gunû*, KUR_a, and NITA as male sex markers have not been established, and to some extent they

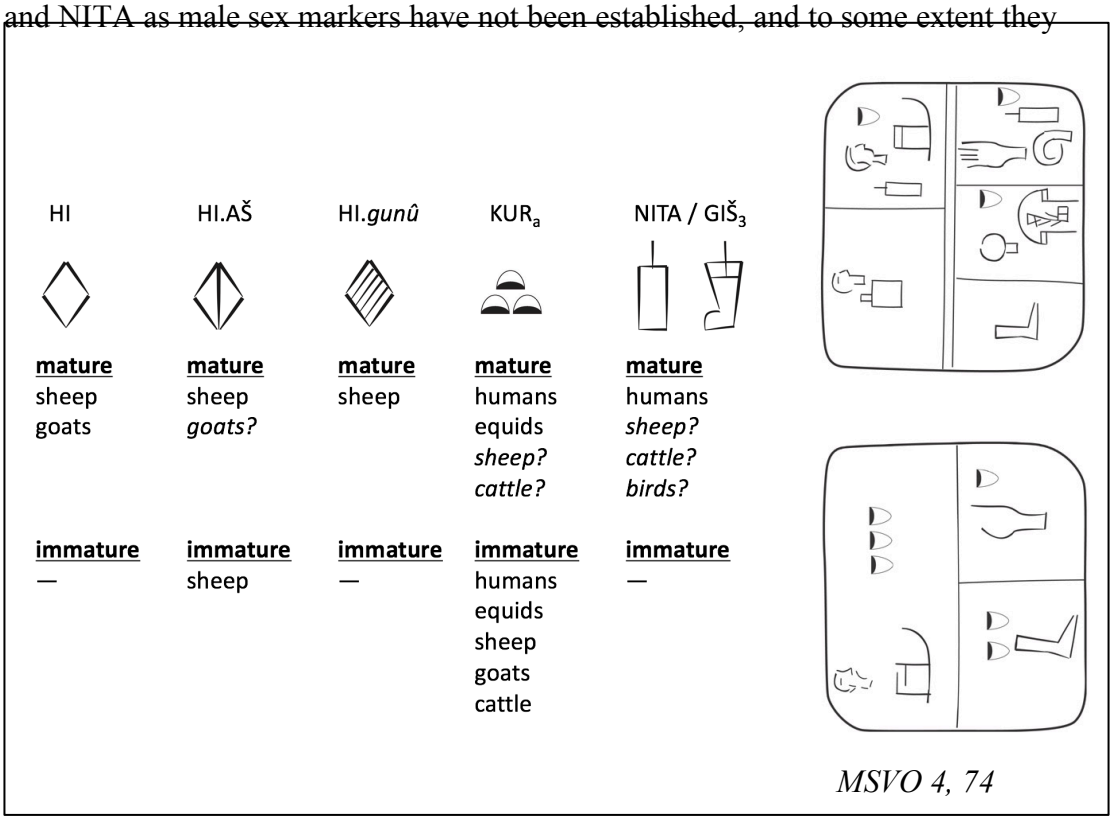


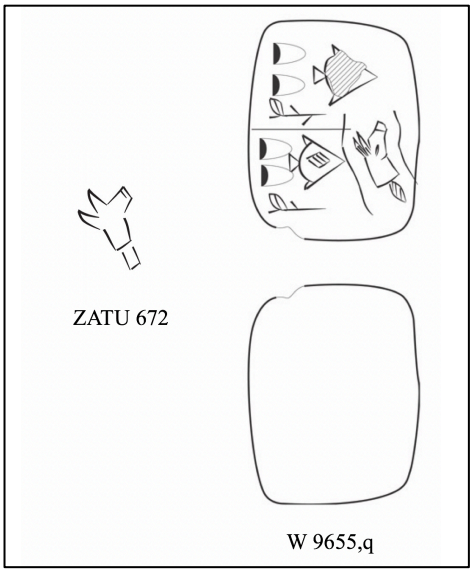
*Figure 6.10: male sex markers in proto-cuneiform. KUR_a is only used with any certainty for adult humans and equids, although it is also used for the young of those and other animals. Uses of NITA for male humans are rare, and MSVO 4, 74 presents one such possible use for 'male GURU*Š-workers'.

May represent conventions established for each species. When two signs can be used for the same species and sex (as in with MAŠ.HI / MAŠ.HI.AŠ and MAŠ.KUR_a), a likely explanation is that varying ways to mark male animals relate to their breeding status (mature or immature, castrated or not), or species/ breed of animal. Breeding status might be expressed through the various forms of HI, a sign which may graphically depict a testicle or testes (Steinkeller 1995b: 703 n. 357)[134]. A sign combination $NINDA_2$.HI.ME  , a HI + ME inside a 'seed-funnel' could also suggest that HI was related to the notion of 'seed' already in archaic texts, and thus

[134] Steinkeller (1995a: 709) adds the possibility that it is 'the ancestor of ŠIR (see šir = Akkadian *išku*, 'testicle')' although Green and Nissen's (1987) list has identified ŠIR already in ZATU 526.

associated with breeding. $NINDA_2.GU_4$ in later cuneiform refers to a breeding bull. Green (1980:4) equates UDU.HI.*gunû* (not in her chart above) through the lexical $AD\text{-}GI_4$ (Civil: 2013) with 'breeding ram = UDUA' (Green 1980: 4; Glassner 1999: 475). In the case of immature animals ($SILA_4$.HI.AŠ for ram lamb), HI.AŠ could not suggest an actively breeding animal. UDU.HI.AŠ is also used for mature sheep as a category contrasting with UDU.HI. *gunû* (Green's UDUA), since they occur next to each other in text MS 4492. HI.AŠ therefore opposing the breeding ram HI.*gunû* might refer to the castrated male, both adult (ZATU 578, Green's UDUNITA) and wethers (ZATU 483, Green's SILANITA). In proto-cuneiform numerical notations a stroke, 'AŠ' is used to specially mark out counted animals, humans, or products (Hawkins 2015).

A further related use of HI appears as part of an uncommon sign ZATU 672 (fig. 6.11). This is most clear in Uruk IV text W 9655,q , where HI.$gunû_a$ is attached to the side of an animal (an equid?)'s head to form ZATU 672 (note the similarity with NAR, ZATU 390). In the same text, two types of vessels—ZATU 711+x? and ZATU 711+ HI.$gunû_a$— are counted (fig. 6.11). This could imply that the modification to the animal was associated with a modification to a product from that animal.



One possibility is that HI.AŠ stood for 'castrated male' in contrast to KUR_a, 'intact (young) male', which would suit the suggestion that KUR_a was understood at some

Figure 6.11: HI + animal head in proto-cuneiform

level as a pictograph for male genitals. There is currently little identified evidence from third millennium Mesopotamian records for the castration of sheep and goats (e.g. Steinkeller 1995b; Van de Mieroop 1993; textual evidence for castration of pigs is similarly missing, Foster and Salgues 2006: 287) although the practice is likely to have occurred (for a general overview of ancient castration practices, Reusch 2013). Maekawa identified that 'amar-ku_5-(d), denoted the castrated cattle (gu_4) and two kinds of equids in the Early Dynastic IIIb Lagash texts (1979:95) and argued that at least by the Ur III period, this term also applied to castrated humans (1980a). However, sheep and goat castration might be expected in the cuneiform records in which detailed animal terminology involving sex and age of animals appear: according to Rougemont (2014: 346) 'the composition of flocks made up exclusively from, or from a majority of male animals is typical for specialized wool production (Killen 1964). Male sheep were castrated for a better wool production'.

Since later cuneiform parallel uses KUR in livestock designations as a geographic indicator rather than a breeding term, this option remains most likely for perhaps all the livestock combinations with KUR_a mentioned above. KUR_a $SILA_4$ and MAŠ.KUR_a *could* after all refer to [the young male of] a particular species, e.g. 'mountain goat', such as those mentioned in the time of Ur-namma as maš-gal kur-ra (Flückiger 1999: 337) or similarly, udu-hur-sag of Ur III terminology (Steinkeller 1995b: 59). Yet the sign stands in clear contrast with SAL for both young sheep and goats, and therefore also implies 'male'. It may be that these signs combine both breed and implied sex information in the use of KUR_a.

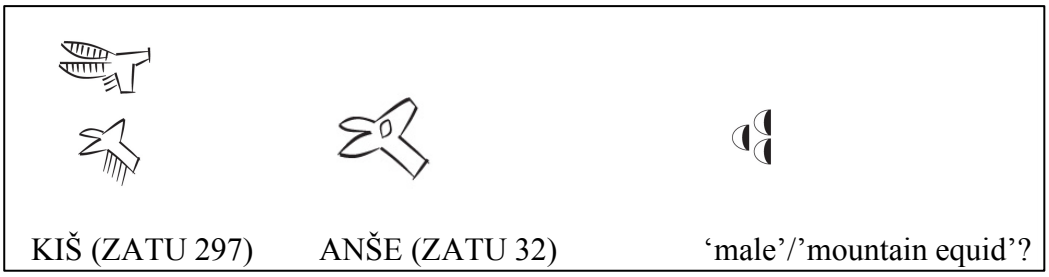


Figure 6.12: Equids and humans

In contrast to the designations for sheep, goats and cattle—for humans and equids KUR_a apparently stands on its own (that is, with no extra 'species' sign) to represent a mature male. This may be compared to the use of the sign GU_4 to communicate both sex and species information. KUR_a can also be combined with human age-group designations TUR, $ŠA_3$ or EN to represent young males (chapter 8a); only a few Uruk IV receipts use KUR_a in combination with GURUŠ where it may indicate males of that status. In addition, an entirely different sign, ZATU 604 might also represent a human male as a sign on its own. If there is a distinction between a male KUR_a and a male NITA it is not yet understood, though it is KUR_a that can apparently alternate between meaning 'man' and 'equid'.

Similarly to the use of KUR_a AM, the combination $KIŠ.KUR_a$[135] may be a geographic reference, 'mountain equid' in some instances. Zarins (1978: 10) understood the Jemdet Nasr combination $ANŠE.KUR_a$ (contra Langdon 1928:25 n. 170 'horse' as in later cuneiform ANŠE.KUR.RA) as 'a generic term merely defining an equid from the foreign mountains, perhaps the Zagros', and notes in Ur III documents the trade of donkeys from Der on the fringes of Elam and Mesopotamia. Zooarchaeological data show that at least two species of equid were present in the

[135] By modern convention, ZATU 32 (an equid head without a mane) is ANŠE and ZATU 297, analysed as ANŠE.*gunû* is called KIŠ (Green and Nissen 1987: 176 and 232; Zarins 2014: 176).

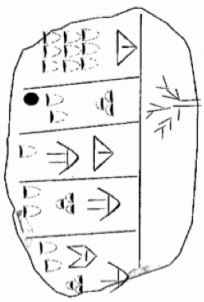
area of Elam itself in the early third millennium (Zarins 2014: 178). The apparently conflicting evidence for reading KUR_a as a geographic or a sex marker in relation to equids might again suggest that both breed ('mountain equid') and perhaps implicitly sex ('male') information were conveyed in the one sign.

In CUSAS 1, 30, CUSAS 31, 44, and W 23999,1 (fig. 6.12) one can observe the striking similarities between designations for equids and for human. Both equids and humans may be indicated by the use of KUR_a and SAL in cases standing on their own apparently for adults, and the signs can be included with further designations for immature equids or humans. While texts with KUR_a and SAL humans indicate age with the addition of TUR and $ŠA_3$, the equid texts here add the sign combination numerals (1, 2 or 3) N_{57} + U_4 for 'yearlings'(chapter 8a). This practice is also known for humans (scheme 2 texts, page 376 ff.), for example in text MS 3035, although in that case, gender designations KUR_a and SAL are not included. In CUSAS 1, 30, the context is considered to be equids only from the summary case labelling the account 'KIŠ' and from the use of AMAR ('calf') in case i. v.

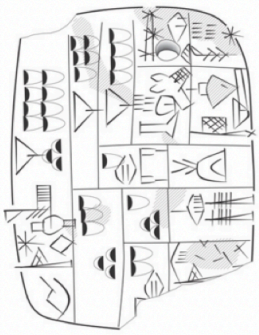
The human/equid accounting ambiguity is made more apparent in the publication of texts by Monaco (2014b: 19), who describes CUSAS 21, 44 as 'probably a list of workers or animals assigned to fields'. In CUSAS 31, 44 (fig. 6.13), the summary designation SAL.KUR_a KIŠ is used for a count of 15 male and female equids (10 male and 5 female), separated in the body of the text into cases of one or two KUR_a and SAL per case. The text presents two notable similarities with texts recording humans – the use of SAL.KUR_a to summarise 'mixed males and females' and the inclusion of 'subcases' to the SAL and sometimes KUR_a entries. These subcases

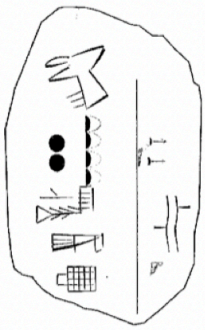
constituted one of the most important distinctions between livestock and human accounts, according to Englund (1995:133). In CUSAS 31, 44, these subcases may be interpreted as names of owners, or names associated with the origin or destination of animals.

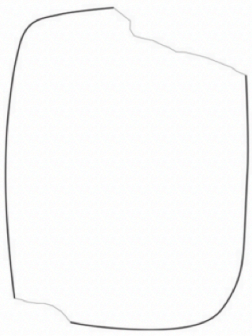
Equids: CUSAS 1, 30



Humans: W 23999,1







Equids: CUSAS 31, 44

Obverse
column 1
1.a. $1N_1$ KIŠ SAL $ERIM_a$ $PIRIG_{b1}$
1.b. $2N_1$ KIŠ KUR_a
2.a. $1N_1$ KIŠ SAL DUR_{2b} $1N_{58}.BAD_a$
2.b. $1N_1$ KIŠ KUR_a
3.a. $1N_1$ KIŠ SAL ZATU 694_c
3.b. $1N_1$ KUR_a
4.a. $1N_1$ KIŠ? SAL×RU
4.b. $2N_1$ KUR_a
5. [...]GAL_a

column 2
1. $1N_1$ KUR_a EN_a $PIRIG_{b1}$
2. $1N_1$ KUR_a PA_a MA $ŠU_2$.GIŠ ZATU756?
3. $1N_1$ KUR_a $KALAM_a$ PA_a
4.a. $1N_1$ KUR_a SI_{4f} TAK_{4a}
4.b. $1N_1$ SAL [...]
5. KIŠ

Reverse
column 1
1. $5N_1$ SAL
2. $1N_{14}$ KUR_a

column 2
1. $1N_{14}$ $5N_1$ $SANGA_a$ ŠUBUR × RAD_{ag} KIŠ K

Figure 6.13: Similarity between equid and human accounts

It is not clear why equids in particular share the strongest similarities in bookkeeping terminology. In fact, a similarity in the recording of humans and equids has also been noted for the third millennium term HAR.TU, indicating a type of equid (Civil 2008: 112) and also a class of persons that could be bought and sold (Sallaberger 1996: 95). The reading underlying the writing HAR.TU is unknown, although Akkadian *wardum* has been proposed (Krebernik 1998: 263 n 267; Marchesi and Marchetti 2011:165 n. 67 summarising the literature). It is possible that this accounting ambiguity has its roots already in the proto-cuneiform practices.

KUR for humans

Less than 1% of Uruk IV and III period texts altogether use the sign KUR_a to indicate humans. Nonetheless, these texts offer clear evidence that the KUR_a sign was used in some cases to count humans of a category contrasting with SAL. These texts can be divided into simple receipts (all Uruk IV script phase), accounts with unnamed KUR_a (two Uruk III and one Uruk IV), and the remainder, accounts with named KUR_a (Uruk III). Texts using only SAL.KUR_a (with no KUR_a marked out in cases alone) as a designation are discussed in chapter 7a; it is unclear if these texts refer to mix sexes or females alone.

Uruk IV

The number of contexts in which KUR_a might stand for male humans are more numerous in Uruk IV than in the much larger body of Uruk III texts. Altogether around fourteen Uruk IV texts from Uruk may record humans as KUR_a[136], together

[136] W 9579,o; W 9579,aa; W 9579,ac; W 9579,bm; W 9579,cf; W 9579,ch; W 9655,o; W 9655,r; W 9655,s; W 9655,t; W 9656,o; W 9656,ef; W 20854; W 20719,1

with one further text of unknown provenance[137]. The excavation numbers of the Uruk IV accounts show that two different groups of six were found, each a small part of the large dumping of Uruk IV phase texts 'below the levelling of III in QA XVI, 2' (Englund 1994: 40) near the Limestone Building.

Vaiman's (1989) assertion that the KUR sign must have meant 'slave' in these Uruk IV accounts, through the argument that there is no other sign used that could represent a counted object, is unsound; the meanings of the majority of signs in these texts has not been demonstrated. Even when their pictographic referent is known the particular use of a sign in proto-cuneiform must be proven through context. The sign closest to the counted numeral is often the counted object, as observed in the cattle receipts (Englund 1995:34–6); this is sometimes but not always the case with the receipts including KUR_a. In fact, in three texts the sign GURUŠ appears closer to the numeral, and KUR_a may be acting to describe the type of GURUŠ (specifically, 'male'?). However, text W 20854 (fig. 5.5f) gives clear proof that at least in some contexts KUR_a stood as a counted object or primary descriptor acting substantively for an implicit object—since it is the only sign in the case, paralleled by SAL.

Of the receipts recording KUR_a, about half are blank on the reverse, and none are sealed. In most cases, further designations are included in the case using the sign KUR_a—the most common signs to accompany KUR are DUB (6x's) and SANGA (5x's), followed by UNUG, ERIM, AB, and DUG (4x's each). Excepting cases where KUR_a stands alone, no two cases including KUR_a in the Uruk IV corpus use precisely

[137] MS 4530

the same set of signs. Therefore, we can't easily identify KUR_a as, or along with, an individual person or office-holder involved in multiple transactions.

Uruk III

Only seven Uruk III script phase texts from Uruk can be identified that may use the KUR_a sign as a category of humans[138], two more text from Jemdet Nasr (two of the SAG x MA texts)[139], and one of uncertain origin[140]. Three further texts from Uruk, eight from Jemdet Nasr, and two unprovenanced, preserve the use of KUR_a for humans *only* in the combination $SAL.KUR_a$. Women of the KUR_a identity (that is, $SAL.KUR_a$) were a more commonly recorded resource in the Uruk III period than male KUR_a. In addition, unlike the use of M388 in proto-Elamite, the use of KUR_a as a human designation in currently known Uruk III texts appears *entirely restricted* to texts including SAL or $SAL.KUR_a$ women, and with only a few exceptions, restricted to texts also including young people. On the one hand, this could reflect only a bookkeeping practice by which KUR_a as a marker for 'male' was only used in direct contrast to SAL—but on the other hand, there are no obvious parallels in bookkeeping format and content by which we could identify groups of male-only captives of similar status to the scheme 1 slave trade texts (pages 365 ff.). Instead, it is suggested here that the cultural and economic situations in which KUR_a-identity humans were being recorded rarely or never involved adult males only, unless such records remain unexcavated.

[138] W 15860,a4, W 22104,3, W 23999,1, W 15776,a, W 17729,bp + W 17729,bx, W 17729,ep, W 15770,y
[139] MSVO 1, 220, MSVO 1, 212–213
[140] CUSAS 31, 27

Male names?

A list of 'male' personal names can be extracted from the few accounts listing human KUR_a with naming sub-cases. The difficulty in identifying recognizably Sumerian personal names in proto-cuneiform texts has been one of the strongest reservations in assigning Sumerian as the primary language of proto-cuneiform, and serves as a reminder of the challenges that remain in deciphering the script (Englund 2009: 7 ff.). Since the signs are presented with later Sumerian values, they can be phonetically 'read' here only with caution.

KUR_a $ŠA_3$ *Male infants*	KUR_a TUR *Male children*	KUR_a *Adult Males*	EN TUR *Young adults?*	AL *Adult Males* /'*Hoers*'(?)
ZATU 773 NI_a ŠU TUR ŠU NI_a [U_4] EN_a PAP_a GI X	EN_a GAL_a AK_a U_4 NIM_a ŠU TUR	PAP_a X [...] EN_aPAP_a GAL_a	$3N_{57}$ ŠU	UB ZI

Figure 6.14: Names of KUR_a males in Uruk III texts. AL and EN TUR are sub-categories to KUR in the text MSVO 1, 220.

Summary

There is overall very limited evidence for the use of KUR_a as a human male in proto-cuneiform in the Uruk III script phase. KUR_a was not a basic sign for 'man' in proto-cuneiform; instead it applied in specific circumstances to refer to males, probably with associated social connotations. The sign appears to be used this way in a handful of proto-cuneiform texts as a human designation for small counts of humans, sometimes named and sometimes unnamed. The texts with KUR_a males do not appear to be the precursors to 'ration texts' known from later periods, since they do not

include counts of grain; instead, they probably count the humans themselves, and are limited to the texts types that almost always include SAL women, and often children. A slave-trade appears to be a very likely context for the features displayed in these accounts. The Uruk IV receipts including KUR_a and/or SAL, on the other hand, remain difficult to understand, and may or may not record KUR_a and SAL human slaves.

Associating specific lexemes with the sign KUR_a remains difficult, but most of the various uses of the sign were probably influenced by a root ideographic value of 'mountain'[141]. The proto-cuneiform livestock bookkeeping tradition discussed above suggests that although KUR_a does contrast with SAL in the context of animal designations, the sign conveyed more information than just sex, since other male sex markers existed. KUR_a and related LAM_{a-b} modified goods, probably by suggesting a mountainous origin for the goods (including 'mountain' breeds of livestock, lapis lazuli, almonds or pistachios, wine or other jarred product, and possibly human workers), and appeared as an element in proper nouns that might have been related to the Sumerian mythological landscape (the e_2.kur temple; kur as the mountainous birthplace of Inana). This may all lend support to the traditional notion that KUR_a could indicate primarily a 'person of mountain or foreign origin', with the implication in some bookkeeping contexts that this person was male unless marked out with SAL.

It might be speculated that the later translation of NITA.KUR in Akkadian as *wardum*, could in fact be quite appropriate for the proto-cuneiform uses of KUR_a and

[141] Possible phonetic uses of the sign are similarly tentative. These include the Sumerian measure name /gur/; or a drink /kurun/ which may be written with the KUR sign.

perhaps also NITA+KUR$_a$ (in fact the later writing for *wardum*) which may have initially referred to humans who had come down or been brought down from the mountains or foreign lands: the (admittedly later attested) verb *(w)arādu*, has a primary meaning 'to go or come down to lower ground, downhill' (CAD 1 II: 212). Domesticated male equids, that could have entered southern Mesopotamian from the Zagros in the late fourth millennium (Goulder 2016), may have been similarly marked—either through the use of a word or only through scribal shorthand— as 'ones come down (from the mountains)' or perhaps in reference to wild animals being brought into herds for breeding and domestication, as is done for donkey breeding even today (Goulder 2016). Two possibilities are presented in figure 6.15 for the reading of Uruk IV receipt W 20854, which may most succinctly summarise the proposed practice. These are the simplest (but not the only) possible explanations for an otherwise difficult problem outlined in this chapter regarding the various uses of proto-cuneiform KUR$_a$.

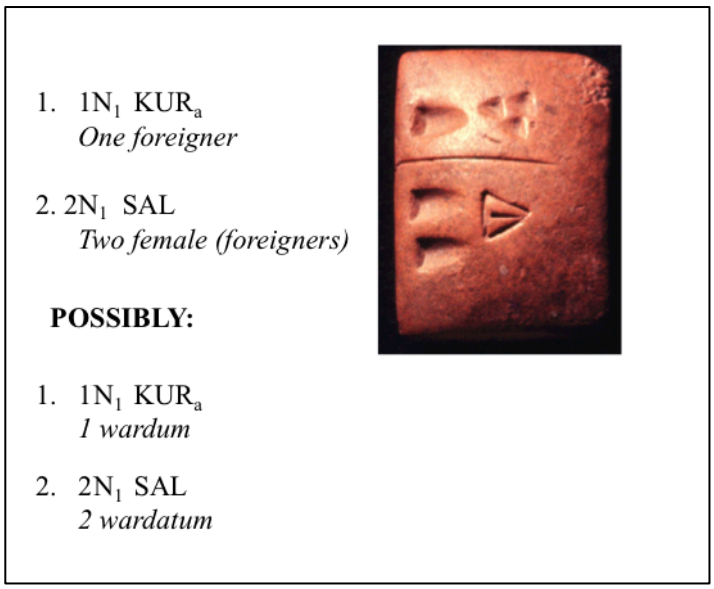


Figure 6.15: Possible translations of Uruk receipt W 20854

Chapter 6b: M388 in proto-Elamite

Sign Frequency and sign form

The proto-Elamite sign M388 is found in around 350 texts (in around 660 entries), and is the second most common (non-numerical) proto-Elamite sign after M288, the 'grain container'. Like proto-cuneiform $KUR_{a/b}$ the sign form is made by the same stylus-point used to make the numerical impressions; this similar stylus is rarely used in proto-cuneiform, and somewhat more frequently in proto-Elamite (though by no means for the majority of signs). The use of this special stylus for both KUR and M388 strengthens the notion that one of the signs was borrowed or that they both have a common origin. However, Proto-Elamite M388, while thought to be in some ways the functional equivalent of proto-cuneiform KUR_a, in fact resembles in orientation the very rare KUR_b and the *later* Early Dynastic cuneiform orientation of KUR (fig. 6.2). That is, M388 is 'upside down' and therefore doesn't appear to 'depict' a mountain. Its uses may instead relate only to markers of persons.

Overview of sign functions

The sign M388 appears to be used in at least two different ways in proto-Elamite. Damerow and Englund (1989a: 56) identify two uses as: 1) a marker before personal names or other complex designations and 2) a counted object, namely, a 'category of worker'. They diverged from two previous interpretations—the first, that M388 is the equivalent of cuneiform TUR (Scheil 1923; Meriggi 1971) a proposition with no supporting evidence, and the second that it was used in reference to animals (Brice 1963; Friberg 1978). The interpretation by Damerow and Englund that the sign refers to humans is adopted as working hypothesis here. Evidence suggests that M388 is used in complex graphemes for the category 'male child' in a handful of texts. In

other cases, M388 appears on its own apparently as a counted object, and sometimes appears at the end of strings of signs. Both of these uses of M388 appear to count unnamed 'workers' or ration-receivers of M388-type. In addition, in far greater numbers, M388 is used in a less clear way to qualify what may be complex designations of persons. That is, when the sign appears at or near the beginning of longer strings which may by current hypothesis identify humans by name or title, M388 may act as a 'Personnenkeil' or social class indicator before the 'names' (Damerow and Englund 1989a: 56 esp. fns. 149–53). About a fifth of the total proto-Elamite corpus (c. 330 texts) appear to use the sign M388 in all these various ways. These hypotheses put forth by Damerow and Englund (1989a)—that M388 sometimes introduces personal names on the one hand, and on the other represents a social class of dependents or slaves—are explored in this chapter through graphotactical analysis.

M370$_b$ + M388 / M370+M388+M370 as a 'male child' or dependent

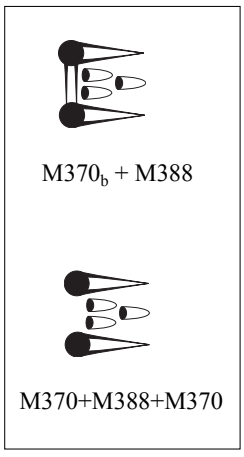


Figure 6.16

The clearest evidence for associating M388 with the meaning 'male' comes from its use in combination with M370$_b$ and the related complex grapheme M370+M388+M370 (chapter 8b). In the M370 series, M388 is a category defining, by hypothesis, 'young male' in contrast primarily to M72 combinations for 'young female'—although more rarely M370 complex graphemes use instead M386 or M46 which have an unclear meaning. M388 is thought in these combinations to be acting explicitly as a male sex marker, but it is also possible that the direct reference is 'person of M388 status', and that male is assumed from its use context and parallel with M72. Male

and female children recorded in the very long rations texts are further explored in chapter 8b.

Other complex graphemes including M388

M388 appears in some complex graphemes, that is, placed inside other signs (fig. 6.17). Apart from M370$_b$+M388 and M370+M388+M370, which are proposed to represent 'male child', these complex graphemes are not deciphered. In the undeciphered complex graphemes M388 is paralleled not by M72 but by a range of signs, including some proposed worker or person category signs (M124, M203$_a$, M376) but also other 'types' of signs such as M288 the 'grain container', and header/household signs like M157, M377+M377 and M184$_b$.

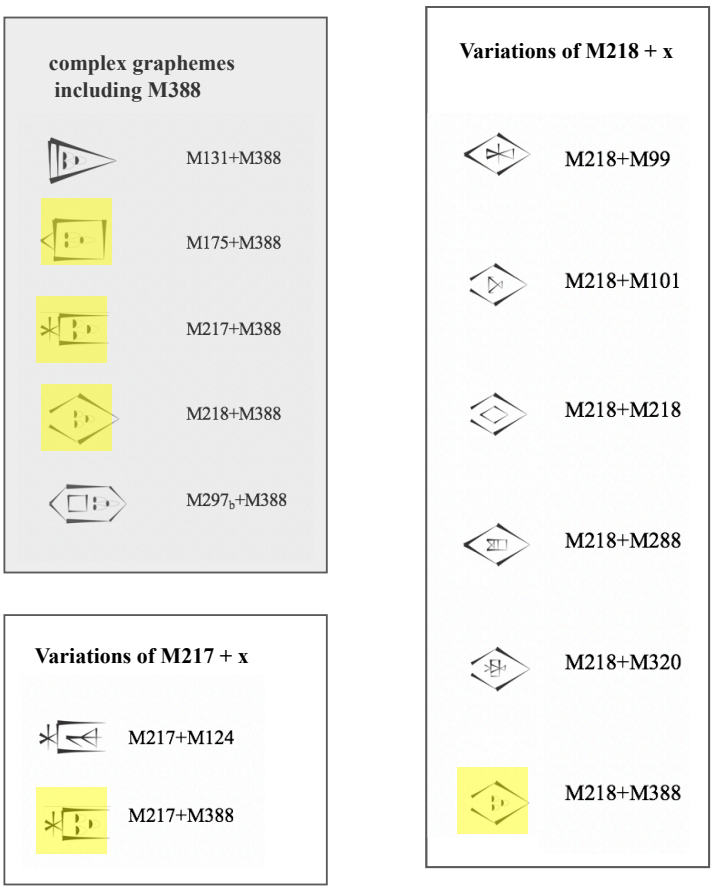


Figure 6.17: Some complex graphemes using M388.

Case study: MDP 17, 43

One of these complex graphemes, M217+M388, is known only from repeated appearances in text MDP 17, 43 (fig. 6.18), where it may be categorizing seventeen named individuals. The indicator M217+M388 appears as the last sign in each entry, before the numerical notation. The last sign in an entry is sometimes understood to represent a 'counted object' (e.g. counted M346 'sheep' in MDP 6, 204), and in this text M217+ M388 may therefore be a counted type of human. Each of the entries between 4–14 ends in this combination, each preceded by 2–4 signs. A complex designation including M388 appears in the first line of the text, and may perhaps be considered part of a header entry that provides information on the remainder of entries within the text.

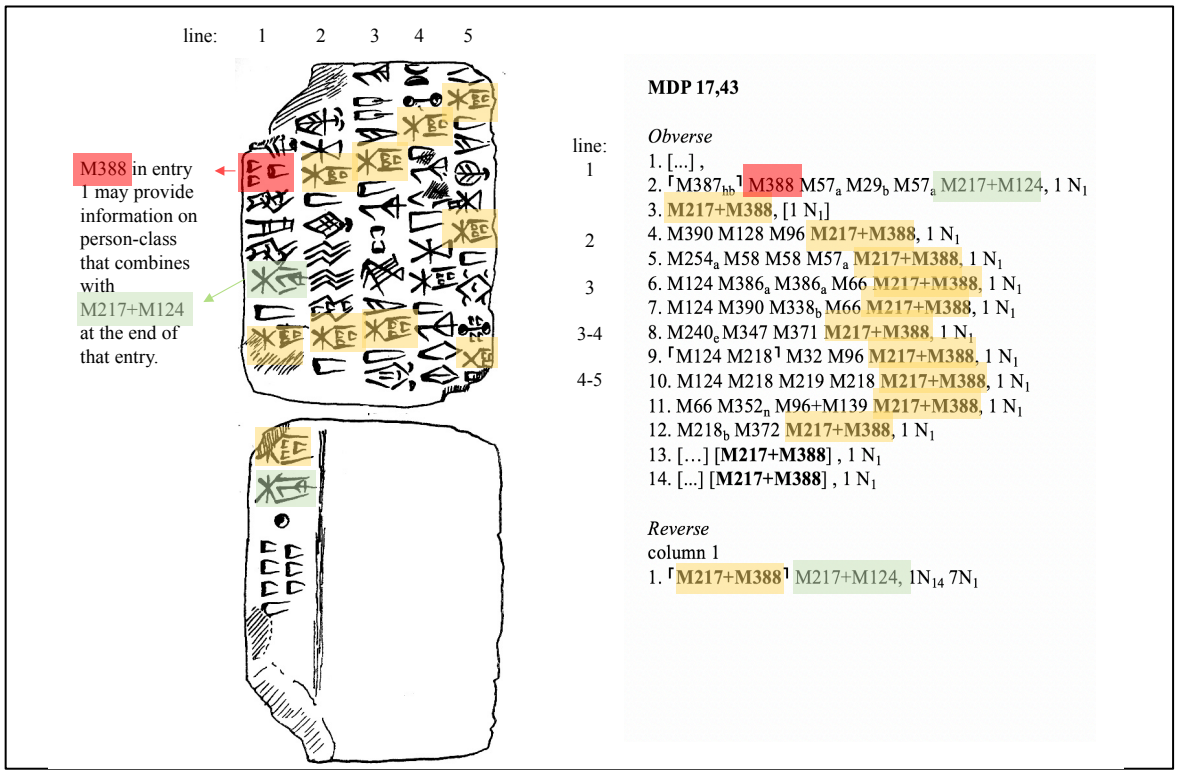


Figure 6.18 Text MDP 17, 43 counts 'named' or otherwise complexly designated M217+M388

The strings of signs preceding M217+M388 in entries 4–14 might, following the general hypothesis of Englund and Damerow, represent 'personal names', perhaps of 'slaves' or workers categorized as M217+ M388. On the other hand, three of these strings begin with the sign M124 which in the very long rations texts is used to qualify 'overseer' entries alternating with M388 'overseer' entries. It is noted that two of the string signs contain a repeated sign (entry 5: M254$_a$ **M58 M58** M57$_a$; and 6: M124 **M386$_a$ M386$_a$** M66) which could potentially be useful in identifying syllabically-written names[142]. Most of the strings preceding M217+M388 in this text are unfortunately not identifiable in other proto-Elamite texts—if they are personal names, the record has therefore not preserved other references to the same names (or not written in the same way). The single exception to this is entry 6, which is hypothetically broken down as follows:

M124	M386$_a$ M386$_a$ M66	M217+M388
Person qualifier	Personal name	'M217-type' person

M124 begins three of the entries, and its consistent appearance near the beginning of sequences in this and other texts (and sometimes as a counted object) suggests it might be a 'qualifier' that can be separated out as preceding the possible 'syllabic' signs. The combination M386$_a$ M386$_a$ M66 appears also in one other proto-Elamite text, MDP 17, 73, which, according to its structure and context may be a list of grain distributions of varying sizes to named M388-status individuals, since its 'header' is M388. Line 15 of that text records M386$_a$ M386$_a$ M66, 1N$_1$ (c. 30 litres of grain, for the M388 individual by this 'name'); by hypothesis this personal name then appears

[142] For example, the discussions of 'ba-na-na' type names from Early Dynastic Ur (Edzard 1960; Biggs 1967; Zadok 1984: 226 for reference to this (non-Elamite) name type in an Elamite textual context). Although the proto-Elamite names above are of a different pattern, A-A-B (not A-B-B).

in two separate texts, in both cases as a 'ration receiver' and in one (MDP 17,43) qualified as M217+M388.

The position of M388 in texts and entries

M388 can appear in different positions within strings of signs. By processing the transliterations available on the CDLI database, a list of 664 entries including M388 was extracted[143] and some basic data was obtained (figure 6.19).

Total entries including M388	*664*
M388 appears only in a complex grapheme	46
M388 is the only sign in the entry	8
M388-initial entries	117
M388-final entries	59
M388 in medial positions	434
M388 is used twice in an entry	15

Figure 6.19: The position of M388 in sign strings

Of the few entries where M388 appears as the only sign, several are known only in the sometimes un-trustworthy line-drawings by Scheil (1935= MDP 26). Where the original texts can be consulted, the only use of M388 on its own in entries are in the summary designations of two texts (MDP 6, 383 and MDP 17, 45), and the single-entry text MDP 17, 19. The limited use of M388 as the only sign in an entry is notable because it implies that M388 may only be an unqualified 'counted object' in limited circumstances. This contrasts with the use of the M370 complex graphemes for 'male and female children', which are never provided with further qualifying signs in an

[143] The data presented in this section diverges from the CDLI transliteration system in one important way: since the relationship between 'header' signs and the first entry remains unclear, and since it is often not possible to identify when a header ends and the first entry begins, the following analysis treats the 'header' and 'entry 2' together as one entry. This reflects the original proto-Elamite more closely in that the conventional break between entries is the use of a numerical notation, which does not appear between the hypothesised 'header' signs and first entry of a text. The separation of 'header' signs is an important step in the decipherment process, but the inclusion of headers in the data here does not skew the results, since the questions being asked of the data take the presence of such signs into account.

entry, and M72 ‘women’, which are only sometimes qualified and by a limited set of signs.

M388 in longer designations

The strings of signs making up entries with M388 are at present very poorly understood. Further sorting of signs that precede or follow M388 in these designations may improve our understanding of sign classification. For example, can the signs that appear before and after M388 be distinguished from each other, or are they drawn from a common set? From the processed CDLI data, it can be shown that 314 unique signs are attested *following* M388 and 270 unique signs attested *before* M388 (fig. 6.20). Slightly less than one third (104) of these signs are common to strings both before and after M388, and two-thirds therefore are unique to either pre- or post-M388 sign string contexts. This type of data could be further analysed, with proper methodological considerations. For example, one would need to observe whether M388 appears in the first entry of a text or elsewhere, since the first entries contain information that is often distinct from entries in the body of a text.

Signs appearing before M388 (270 total)
157 appear only once
49 only twice
49 between 3–10 times
10 signs, about 11–21 times
2 signs (M305 and M157) at 40 and 61 attestations each

Signs appearing after M388 (314 total)
168 appear only once
41 appear only twice
79 appear between 3–10 times
16 between 11–21 times
7 signs between 23–39 times
3 signs between 53–67 times
1 sign (M218) at 123 times

Figure 6.20: differing patterns of sign use are apparent for the sign-sets occurring before M388 in sign-strings versus after.

If some longer strings in proto-Elamite contain within them personal names (Damerow and Englund 1989a), perhaps written syllabically, it might be expected that recognizable sequences follow (or precede) M388. Within 1,700 documents a good number of personal names might appear multiple times. To put this hypothesis to a preliminary text, all entries including M388 in sign-strings were collected with dramatic result—out of over 500 entries, as few as five entire entries including M388 (plus two M388 complex graphemes) can find exact matches in another text (fig. 6.21)[144]; this number can be only slightly increased by ignoring variants and including probable matches with broken sign strings. Of these five, M370 M388 and M388 $M3_b$ are rare 'worker category' designations included in long rations texts (not understood to be 'personal names'), and the other three are all modified with signs *before* rather than *after* M388, leaving us with *no identically repeated entries* of signs that may represent repeated personal names following M388. In general, the scarcity of matching full entries in proto-Elamite texts might suggest that a proto-Elamite entry is a 'sentence' with information of different types and included in ways that are unlikely to frequently repeat in their precise combinations, although clarifying what sort of administrative practice this might reflect is at present difficult.

Full entry including M383	**number of times identified**
M370+M388+M370	8
$M370_b$+M388	14
M370 M388	5 (in one text)
$M5_a$ M388	2
$M41_g$ M388	2
$M157_{(a)}$ M340 M54 M388	5
M388 $M3_b$	2

Figure 6.21: There are surprisingly few identical sign-strings with M388 in proto-Elamite—the entire list is presented here.

[144] This, if accepting M157 and $M157_a$ as equivalent.

However, a much larger number of matches can be found in two or three signs following M388 in the same order within an entry that otherwise differs (fig. 6.22), perhaps suggesting that 'personal names' were usually written with only two to three signs and could be followed by other information. On the other hand, even among these 2–3 sign matches, most of the repeated entries are found in only one or two other texts. Repeated 'personal names' from this list of course may appear in entries without the M388-designation. This may be the case even if they are individuals of M388 identity, as explored in the following section.

M388 in 'header' entries as qualifying further text entries

Internal evidence of the texts suggests that the position of the entry within a text may affect how it is interpreted (and this may differ for text types). Signs included in the 'first' entry of a text (after the header sign) may imply semantic qualification of further entries of the text. This can be shown through comparison of a large high-level account MDP 6, 5242 (fig. 6.31–2) and two smaller accounts, which each record a 'name' from the list in figure 6.22 in different contexts.

In MDP 6, 5242, the sign M388 is used in sixteen entries (fig. 6.32a), which cluster near the middle of the text and contribute to the impression of an internal ordering of the text despite the irregular distribution of capacity measures[145]. Most of the sixteen sign combinations following M388 in this text match the order of parts of entries (though not entire entries) in other proto-Elamite texts, however not always immediately following M388. For example, in entry 24 of MDP 6, 5242, the series $M305_j$ M388 M32 $M66_a$ can be hypothetically broken down as follows:

$M305_j$		M388		M32 $M66_a$
household	+	Personnenkeil	+	personal name

[145] A line drawing and discussion of the text were prepared by this author for Masters of Philosophy dissertation (2012). The line drawing is available on the CDLI, P272825.

2 signs following M388	2-3 signs following M388
M157 M207$_e$ ⌜M131$_d$⌝ M248$_g$ **M388 M4 ⌜M218+M101⌝** M288	⌜M387$_a$⌝ **M388 M9 M318$_{a1}$ M371**
M157 M343 **M388 M4 M218+M101** M371 M346	[…] **M388** ⌜**M9**⌝ **M318$_{a1}$ M371** ⌜M36⌝
⌜M387$_{bb}$⌝ **M388 M57$_a$ M29$_b$** M57$_a$ M217+M124	M157 **M388 M9 M318$_{a3}$** M292
[…] **M388 M57$_a$ M29$_b$** M288	M157 M352$_b$ **M388 M66 M219 M218**
M149$_a$ **M388 M218 M295**⌝	M157 ⌜M57$_a$ M240⌝ M96 M218 M139 ⌜**M388 M66$_a$**⌝ **M219 M218** M288
M139 **M388 M218** ⌜**M295**⌝ M297	M157 **M388 M66 M352$_o$** M99 M387$_a$ M297⌝
⌜M387⌝ **M388 M218 M386$_a$** M230$_a$ M96	M305 **M388** ⌜**M66**⌝ **M352$_o$ M218** M218+M320⌝
M112$_n$ **M388 M218 M386$_a$** M317	M348 **M388 M66 M352$_o$ M218** M259 M218
M311$_b$ **M388 M218 M386$_a$** […]	[…] **M388 M66** ⌜**M352 $_o$**⌝ M251$_{c2}$ M66
⌜**M388**⌝ **M262 M259** M218	**M388 M66 M352$_o$** M370 M218
M388 M262 M259 [...]	[M305] **M388 M128$_d$ M128$_d$ M96** M263$_{b1}$
M324$_c$ […] M134$_d$ **M388 M347 M371**	M305 **M388** ⌜**M128$_d$ M128$_d$ M96**⌝ M354
[…] **M388 M347 M371**	⌜M387⌝ **M388 M218 M386$_a$** ⌜M230$_a$⌝ M96
M157 **M388 M347 M371** M139 ⌜M297$_b$⌝	M112$_n$ **M388 M218 M386$_a$** M317
⌜M323⌝ **M388 M347 M371** M218	M311$_b$ **M388 M218 M386$_a$** [...]
[...] M136$_c$ **M388 M377$_e$ M347** M371 [...]	M157 **M388 M219 M48$_k$ M96** M288 M297
M157 M388 M262 M372 **M388 M377$_e$ M347** [...] M288	M327+X ⌜M54$_i$⌝ **M388 M219 M48$_k$ M96** […]
⌜M111$_a$⌝ **M388 M387$_c$ M318** $_a$ M223 ⌜ M377$_e$⌝ M347 ⌜M371⌝	**M305 M388 M240 M97$_h$ M4 [M218 l**
M111$_a$ M388 M387$_{ca}$ M318$_a$ ⌜M221⌝ M377$_e$ M347 M371 M36+M35	

4 signs following M388	
M51$_a$ **M388** ⌜**M24**⌝ **M33 M371 M317 (same text)**	M5$_a$ **M305 M388 M240 M97$_h$ M4 M218** M263
M112$_o$ **M388 M24$_1$ M33 M371 M317 (same text)**	*M139 **M388** M57$_a$ ⌜**M240 M97$_h$**⌝ **M4** [...]
M210$_g$ M305 **M388 M146**⌝ **M97$_h$ M4 M218**	[…] **M388 M332$_d$ M4 M338**
⌜M305 **M388 M146 M97$_h$ M4**⌝ **[M218]**	M102$_i$ **M388 M332$_f$ M4 M338$_q$**
[...] ⌜**M388**⌝ **M146** ⌜**M97$_h$ M4 M218**⌝	M325 ⌜M175+M136 M36+1N$_{14}$⌝ M243$_e$ **M388 M347 M377 M218**
M157 M195+M57 **M388 M146 M377** M57 M288	M111$_e$ **M388 M347 M377$_e$ M218 M36**+1N$_{30d}$
[...] **M388 M146 M377$_e$ M347 M371** M54	⌜M111$_a$⌝ **M388 M347 M377$_e$ M218 M36**
M388 M146 M377$_e$ M347 ⌜**M371**⌝ [...]	M305 **M388 M9 M4** [...]
M305 M388 M240 M97$_h$ M4 [M218]	[…]**M388 M9 M4 M218**
M5$_a$ **M305 M388 M240** ⌜**M97$_h$**⌝ **M4 M218** M263	⌜M305+X **M388**⌝ **M9 M4 M218** M263$_{b1}$
⌜M157$_a$ M195+M57 **M388 M251$_m$ M048$_i$ M96**⌝ M288	**M157** M175+M288 M39$_b$ **M388 M32 M297 M288**
M157$_a$ M195+M57 M147 **M388 M251$_m$ x M48$_d$ M96** M262$_1$	**M157** M177$_a$ **M388 M32 M297 M288**
M157+M136 **M388 M380 M218+M320 M347 M377** [...]	M157 M325$_d$ **M388 M146 M371** ⌜M288⌝
M248$_d$ **M388** ⌜**M380**⌝ **M218+M320** ⌜**M347 M377$_e$**⌝ M243$_b$	M151$_a$ **M388 M146 M371** M297
	⌜**M388**⌝ **M380 M218+M320 M347 M377$_e$**

Figure 6.22: A comprehensive list of sign-strings including M388 that contain two or more signs in the same order as can be found in at least one other proto-Elamite text. The number of matching sign strings might be considered curiously low, given the theory that M388 may introduce 'personal names' and is found in around a third of all proto-Elamite texts.

These last two signs, the proposed 'personal name', can be identified in two other texts. In MDP 17, 490 (fig. 6.23) they occur as a discrete entry followed by the 'grain container' sign M288, suggesting the individual 'M32 $M66_a$' was receiving a grain distribution. While there is no M305 or M388 preceding this designation in that entry, both of these signs, M305[146] and M388, are used in the *first entry* after a broken 'header' sign in this text.

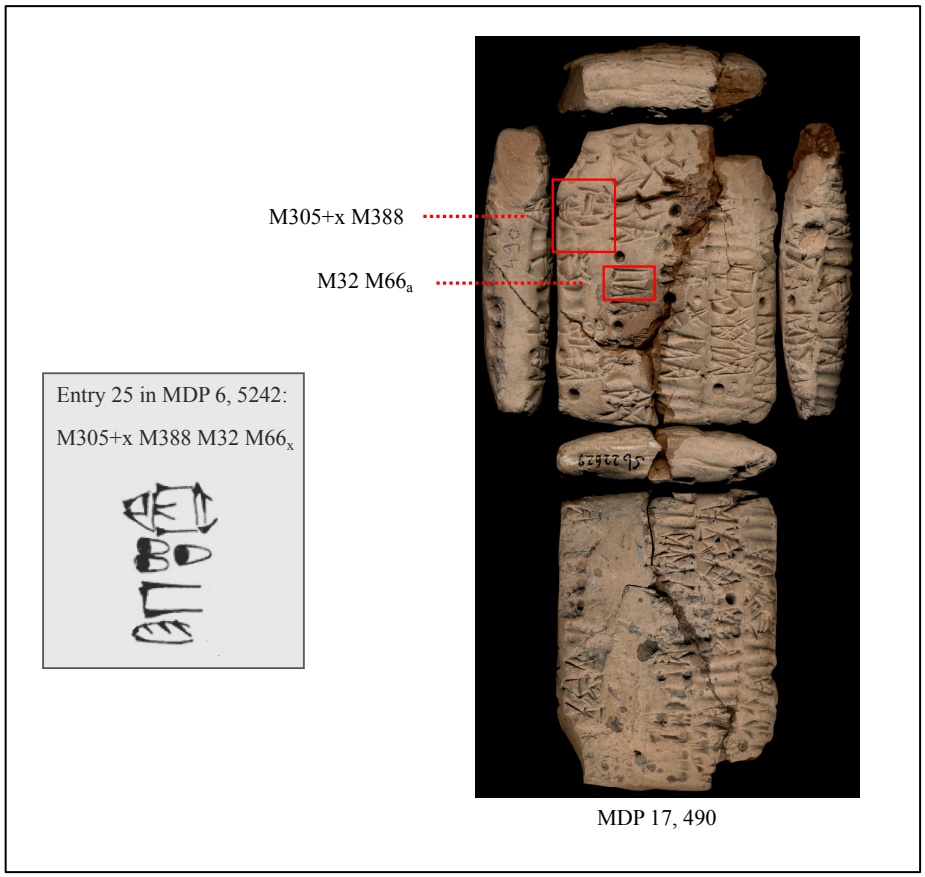


Figure 6.23: Tracking a possible proto-Elamite 'name' (M32 M66) between documents.

This format, in comparison with the structure found in MDP 6, 5242 suggests that the information 'M305+x M388' at the beginning of text MDP 17, 490 does indeed qualify all or some of the remainder of entries in that text; that is, 'M32 M66' refers

[146] Here with the addition of an inscribed sign, possibly M340

to a person(?) described as an M388, and also under the category or further description M305—as is the situation in MDP 6, 5242. This sign combination M32 $M66_a$ is found in only a few texts, another one being MDP 6, 4997 where it appears in a partially broken entry that might begin with M388; in any case most entries in this text (including the heading and summary lines) use the sign M388, further strengthening the link between this designation and M388 'status'.

M388 in text headers

Over 60% (c. 214) of the texts using M388 have it occurring in the first entry of the text following the header, or as the header itself. Only eleven texts have been identified that use M388 as the very first sign of the text (see below), while over 200 use one or more of what may be 'header/household' signs (the most frequent being M157) and possibly other signs before M388. In some 'headers', M388 may mark the beginning of the first unit of information following the text header, perhaps by qualifying the first of a list of personal names, since it is usually followed by a sequence of other signs before the numerical notation. One of a few observable patterns can, by hypothesis, be understood as:

household ⟶ M388 ⟶ name? ⟶ object ⟶ count of the object

An example is MDP 6, 212, which may count sheep belonging to different M388 individuals. While M388 is only used before the first proposed 'owner name', it may apply to further entries in the text.

Groups of texts with similar headers including M388

M388 is used in five of the group of 11 simple worker-and-ration texts discussed on pages 160–61, in the header string M157 M340 M54 M388 (accounting also for one of the few 'repeated sign' combinations in fig. 6.21). These texts are among those that share the ratio of $15N_{30c}$ per counted individual. In another coherent group of texts (MDP 26, 29–42, fig. 6.24) which all share the post-script $M3_b$, the sign M388 appears in similar positions within slightly varying headers. All of the heading entries in MDP 26, 29–42 begin with the combination M157 M196+M57, but only some add M388 and/or other signs. Further study of the variations in such similar texts, cross-analysed with examples from the broader proto-Elamite corpus, might help to explain the role of M388 in proto-Elamite writing.

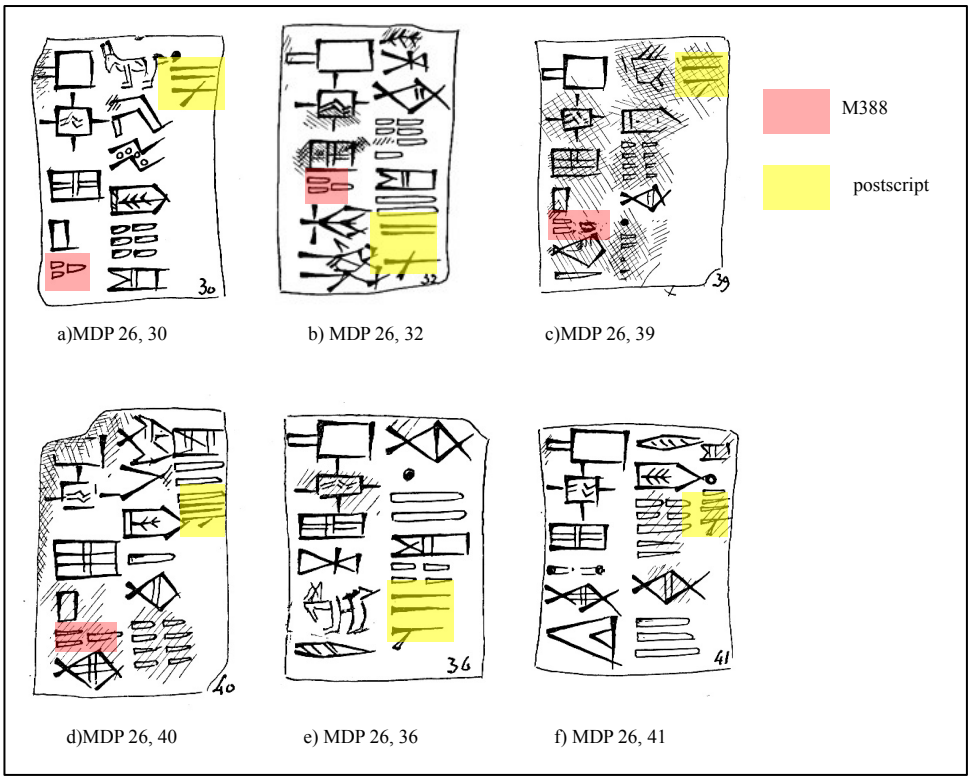


Figure 6.24: Related ration receipts, all with M388 in their complex first text entry

Texts in which M388 is the only 'header' sign

Eleven texts begin with M388 with no preceding 'header' signs. These fall into two main groups. The first are short documents, blank on the reverse, and contain only one entry. They may be described as 'receipts' recording a single unit of information. Most receipts have small numerical notations in the capacity measure system (MDP 17, 59 has '21'; MDP 6, 226 '10'; and CahDAFI 1, 58 12 '6'), excepting MDP 17, 254 which appears to count $2N_{48b}$, or "1,200" in the sexagesimal system used sometimes to count humans. This text by hypothesis could represent a personal name of someone who 'owns', or otherwise represents, unnamed counted individuals in the text. The other short receipts often appear to count grain distributions to unclear M388-status individuals. In MDP 17, 59 the amount, equivalent to 390 N_{30c} is suspiciously close to the amount expected for a single individual for a year of 360 days (Englund 1988 for proto-cuneiform) plus precisely one extra month, at the rate of $1N_{30c}$ per day.

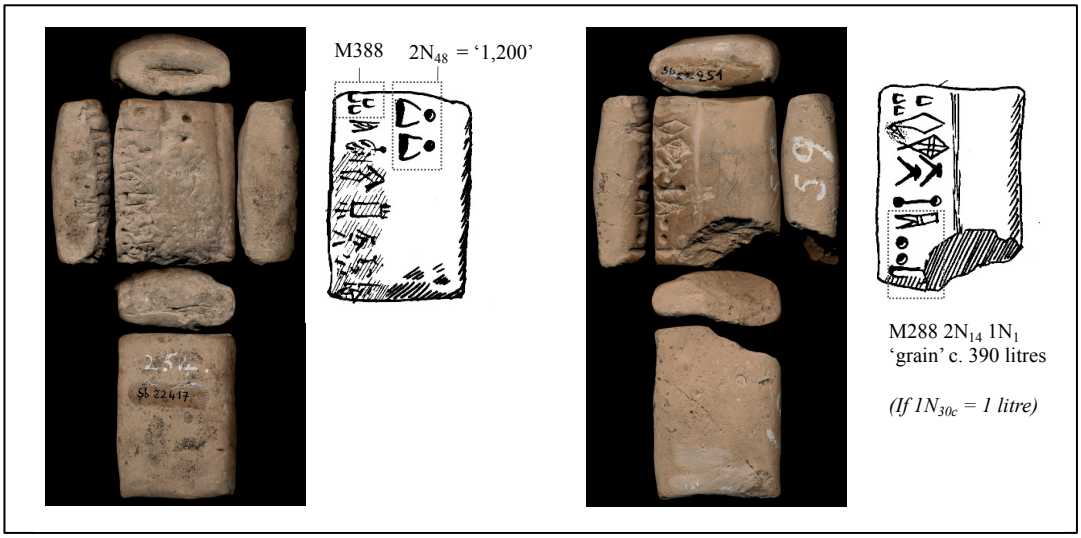


Figure 6.25: Examples of short receipts beginning with M388. Left: MDP 17, 254; Right: MDP 17, 59.

In contrast to the single-entry receipts, two small multiple-entry documents and three longer accounts also begin with M388. MDP 31, 43 may count 10 ‘named’ or complexly designated individuals, and the summary on the reverse is ‘10’ $M139_{a2}$. This is also the last sign of the first entry, and can be added to the examples that suggest the first entry contains information which applies to the remainder of the text.

Significantly, the text might be read to suggest that $M139_a$  may be a ‘type’ of M388 (or M388 a type of $M139_a$). While M139  is known from around 35 texts, the variant $M139_a$ is limited to this text.

Another significant text beginning with M388 is MDP 17, 73, which is mentioned above for displaying a sign-string in the text body found directly qualified with M388. Unfortunately, the damage to the text makes it difficult to study the numerical notations, but the text appears to be entirely recorded in the capacity measure system, unlike the other texts beginning with M388 described above. This text may therefore represent grain distributions to individuals of the category M388, each complexly designated in strings of signs between 2–5 characters in length. The summary of the text is a large capacity measure introduced with the ‘grain container’ sign M288. The numerical entries in the final two rows of the text body are notably smaller than for the beginning of the text.

Texts in which two M388 ‘frame’ the signs of the first entry

In fifteen texts, M388 appears twice in an entry, in what is either ‘framing’ of a string of signs, or two separate functions for M388. Two of these entries are the summary lines of text MDP 6, 4997 discussed below; and the remaining 12 (excepting an

unusual, perhaps unreliable drawing by Scheil [MDP 26, 403]), are all in the first entry of the text following the header. Some of these are short, single-entry documents ending in a grain notation (e.g. MDP 6, 263; MDP 6, 4996). Others are longer, for example MDP 17, 45, a text which is one of the few whose summary designations is M388. This suggests that the second M388 in the opening entry of that text may indicate the 'object' being counted in the decimal system implicitly in the entries of the remainder of the text. This is not necessarily the case for the other examples listed in figure 6.21, which require further study.

[…] ⌜**M388**⌝ M122 $M242_{ab}$ M96 **M388** M218 $M44_{c}$ […]
M1 **M388** M347+$1N_{14}$ M371 M291 **M388** M387
M1 **M388** $M254_{h}$ $M254_{h}$ M291 **M388**
M147 M1 **M388** $M242_{k}$ $M228_{b}$+M320 M291 **M388**
M157 **M388** M218 $M329_{b}$ M388 M66 ⌜M136 M259⌝ **M388** M218 M314 M297 $M206_{d}$
$M195_{d}$ **M388** M218 M329 **M388** M263 ⌜$M281_{f}$ $M377_{e}$⌝ M347 M371 M288
M288 **M388** ⌜M341⌝ M388 M365 **M388** M6 M388 […]
M365 **M388** M57 $M318_{a3}$ M371 **M388**
$M387_{i}$ $M387_{i}$ **M388** M390 ⌜$M128_{l}$⌝ $M7_{a}$ M96 **M388**
M157 **M388** ⌜$M260_{l}$⌝ $M380_{b}$ **M388** $M262_{l}$ $M224$⌝ M288
M157 **M388** M262 M372 **M388** $M377_{e}$ M347 […] M288
M157 **M388** $M262_{l}$ $M380_{c}$ **M388** M145 M66⌝ M288
M327+X **M388** M387? M263 $M314_{f}$ ⌜M96 **M388**⌝ M301 M372 ⌜$M367_{c}$⌝
M327+M342 M147 M1 **M388** $M242_{k}$ $M228_{b}$+M320 M291 **M388**
[…] $M249_{n1}$ **M388** ⌜M153⌝ M296+M296 […] **M388**

Figure 6.26: Entries in which M388 is used twice.

Decimal counts and rations for M388

A count of 591 unnamed M388 individuals is recorded in text MDP 17, 45 (fig. 6.27a/ Nissen et al. 1993: 77). These are listed in unevenly-sized groups ('94', '69', '147', '44', '50', '12' and '75') headed by different designations. Nissen et al. (1993) propose to understand these as work groups, and the use of M291 in the first entry may be part of the designation of an administrator in charge of these groups (see also Johnson 2015: 175 ff.). Other decimal counts of M388 probably occur, but the

numerical system is not always explicitly proveable unless the numbers reach above '100' so that the sign N_{23} (for '100') is used.

Text MDP 6, 399 counts M54 M388 ('yoked M388') on the obverse in the decimal system, with one group as large as 595 'M388'; on the partially broken reverse, the tally of M388 is followed by notations in the capacity system approximating 8,500 litres, accurate down to a fraction of a litre (N_{24}), following the absolute measure estimates proposed by Damerow and Englund (1989: 26), and maintaining a ratio of very nearly $15N_{30c}$ per counted worker.

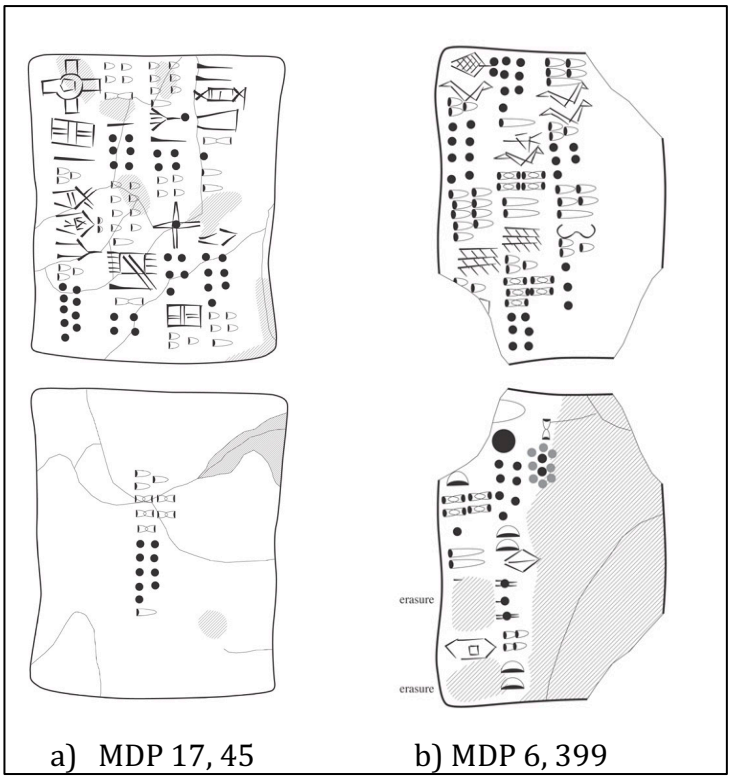


Figure 6.27 a) decimal count of teams of unnamed M388 'workers' b) decimal count of teams of unnamed M54 M388 along with a capacity measure summary indicating a large amount of grain

MDP 6, 4997: M388 as work-group 'foremen'?

The text in figure 6.28 was used by Nissen et al. (1993: 78–9) to describe the development of bookkeeping relating to labour gangs in proto-Elamite. It counts nameless groups of M388 'workers' and named M291 M388 'overseers(?)' in the decimal system, as well as including grain distributions to each 'work gang'. This text is unique in the proto-Elamite corpus, although the information it provides is complemented by some of the features of other texts, for example MDP 17, 45 (fig. 6.27a), which also uses M291 and M388 together in decimal counts.

There are many interesting features of this text, but at present there is space only to mention that the two 'individuals' counted with $1N_1$ in the text (fig. 6.28) appear in the text summary followed by the sign combination M291 M388 (*overseers of M388?*), the total count of nameless M388—presumably under each of their command—and the amount of grain associated with each. The ratio of grain per counted individual in both summaries is consistent, and is almost, but not precisely, the rate of $15N_{30c}$ per individual known from other texts (the first summary seems to have two too many people, and the second, three too many, to reach exactly $15N_{30c}$/person).

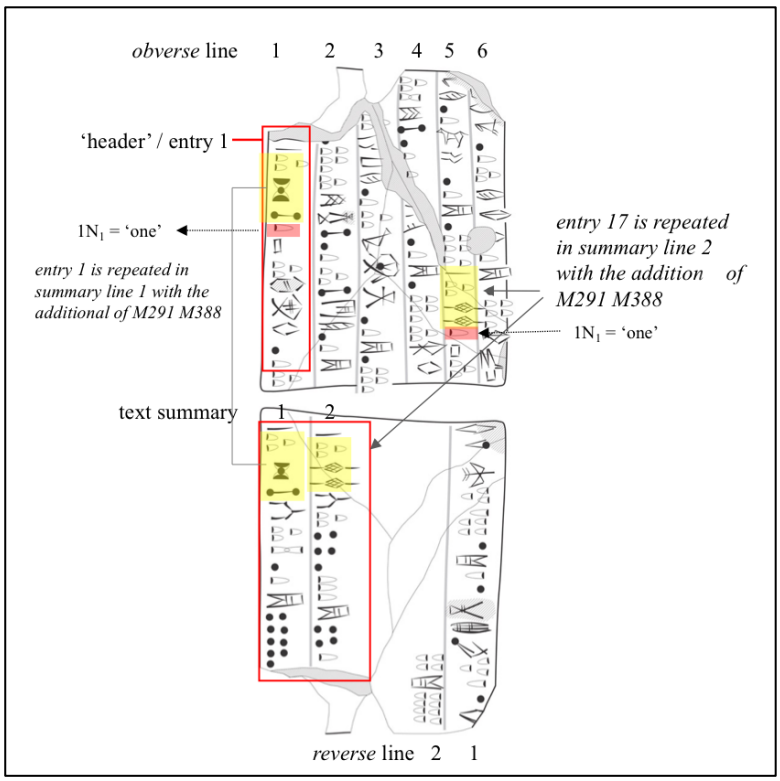


Figure 6.28: Text MDP 6, 4997 records 'teams' of unnamed M388 headed by what may be named 'overseers'.

M388 in the 'very long rations texts'

The very long ration texts (appendix pages 446–9) described by Dahl et al. (2018) are characterized by their repetitive structures and inclusion of 'women' and 'children' signs (including the complex graphemes M370$_b$+M388 and M370+M388+M370). The texts are divided into 'units' beginning with a longer designation and followed by a series of short entries made up of a small group of signs that may represent 'worker categories' (Dahl et al. 2018). Each unit is concluded with a grain notation (see figure 8.14 for diagram of the structure of a single unit). It is hypothesized that the texts record 'teams' of workers defined by their task or other person category (including in some cases as 'women', 'girls' or 'boys'), and organized into groups headed by named individuals with their own distinct set of titles.

In all of these texts, M388 appears in the proposed 'overseer' designations that head each work team[147]. The header entries of each unit in all three very long rations texts display a distinct pattern of sign use that differs from the entries listing 'workers' that make up each unit (figs. 6.29 and 8.14). They are also marked out distinctly by appearing after the 'grain container' M288 and capacity measure entry which ends the preceding 'team'. Those capacity measures are proposed to represent 'rations' for each group at a rate shown to be standard at $15N_{30c}$ per counted individual in the team, where the preservation of the text allows calculation, and strengthening the interpretation of these texts as 'ration lists' for workers (Dahl et al. 2018).

The repeating structures of the 'overseer' designations are observable in figure 6.29. By comparing all the fully-preserved entries following the capacity measure notations, the 'rules' for unit header designations become apparent. The designations fall under one of the following categories, they:

1. begin with M124 (30 times), or have M124 in another position (2 times)
2. end in M54 (9 times) or have M54 in another position (1 time)
3. And/or begin with M388 (18) or have M388 as the second sign (5 times)

All complete unit header designations fall into the above categories, with only six broken entries that cannot be proven to follow one of these patterns. A few designations fit in both category 2 and 3, using M388 in first or second position and M54 in ultimate position. The distribution of these patterns is not even over the three long rations texts, although the texts are fragmentary and preserve different sections which may skew the particular combinations that appear (in the chance that some

[147] However M388 is not strictly limited to the 'overseer' designations: in a few instances, in combination with other worker category signs, it appear within the 'teams' (RT 3 only, Entry 46': $M351+1N_{14}$ M388, and entry 74': M388 $M3_b$).

level of internal ordering grouped different types of units by ‘header’ designation, for which there is some indication). In RT 3, the pattern is less clearly definable, and the state of the text interferes with testing any ‘rules’ of entry order observed. Like in RT 1 and 2, unit ‘headers’ seem to vary between either including M388, or M124, although no unit headers with only M54 are preserved in this text.

M388 appears with different frequency in the long rations texts (RT 1–3) with M370 complex graphemes. While it is identified only once in RT 1, and 10 times in RT 2, it is found 20 times in RT 3 (Dahl et al 2018, figure 7). This last very long ration text is also the one in which only one adult M72 ‘woman’ is identified, in contrast with the 16 and 22 women appearing respectively in RT 1 and 2. A notable pattern in RT 3 is the strong tendency for unit header designations beginning with M388 or M124 to end in $M3_b$. This is visible for six of the ten complete entries with M388. Another pattern in this text is that the first entry in a team is often (or perhaps always) a worker category in the form of M370 + SIGN (e.g. M370 M54; M370 M317).

Understanding these ‘unit headers’ as ‘overseer designations’ remains a working hypothesis. Occasionally the ‘units’ (number of entries before the next grain notation) are only one entry long, and followed directly by a capacity notation. Conversely, in RT 3 a few longer designations including M124 and $M3_b$ which would otherwise be expected to represent ‘overseers’ appear in the middle of a unit, such as entry 72’ with ⌜M124⌝ M218 M106 $M3_b$.

How can the hypothesis that these designations represent ‘personal names’ of overseers be tested? Looking first at the designations beginning with M124 (figure

6.29 and 6.30), out of 28 partially or fully preserved entries with at least two signs, only one short string is precisely the same (M124 M218). On the other hand, M124 is directly followed by M218 six other times with further signs continuing the string; and only once M218 appears in a location other than directly following M388 — in the string M124 M97$_h$ M218. A next step may be to compare the 'unit header' strings using M388 with other strings including M388 in the proto-Elamite corpus, to determine if the leaders of work groups here can be identified in other administrative contexts.

M124-initial headers	**RT**
M124 M9 […]	1
M124 M97$_{h}$ M218	1
M124 M115$_{a}$ ⌜M281$_{c}$⌝	1
M124 M145$_{a}$ M220	1
M124 M218 […] ⌜M96⌝	1
M124 […]	1
[...] M124 […] ⌜M387⌝	2
M124 M106+M288 ⌜M220⌝	2
M124 M218	2
M124 M218 M048~c x M004	2
M124 M218 ⌜M246⌝ [...]	2
M124 M218 M371 ⌜M332$_{d}$⌝	2
M124 M218 […]	2
M124 M263$_{1}$ M109 M66	2
M124 M318$_{a}$ M9 ⌜M371⌝	2
M124 M352$_{o}$ M97$_{h}$ M218	2
M124 ⌜M370⌝ [...]	2
M124 ⌜M371⌝ M9 M371 M3$_{b}$	2
⌜M124⌝	2
⌜M124⌝ [...]	2
⌜M124⌝ M352$_{o}$ M230	2
M124 M097$_{h}$ M387 […] M4	3
M124 M110 M86	3
M124 M129 M371	3
M124 M218	3
M124 ⌜M295$_{da}$⌝ M223$_{c}$ M298	3
M124 M390 M9 M371	3
M124 […] ⌜M240⌝ M47$_{c}$ M3$_{b}$	3
M124 […]	3
⌜M124⌝ M66 […] ⌜M371⌝	3
⌜M124⌝ […] ⌜M242$_{x}$ M4⌝	3
⌜M124⌝ M218 M106 M3$_{b}$	3
M124 in other positions	
M370 M305+X M297⌝ M124	2
M431 M124 M102$_{da}$ M4	3

M388-initial headers	**RT**
M388 M219$_{f}$ [...]	2
M388 ⌜M263⌝ M218 ⌜M419⌝ […]	2
M388 M314 M66 M218	2
M388 M387$_{c}$ M352$_{s}$ M325 M54	2
⌜M388⌝ M387 M9 M371 M54	2
M388 [...]	3
M388 […]	3
M388 […] ⌜M370$_{d}$⌝ M3$_{b}$	3
M388 M49$_{f}$ M4 M263 M109 M3$_{b}$	3
M388 ⌜M115$_{a}$⌝ M296+M296 M329	3
M388 M218 M143 M371 M3$_{b}$	3
M388 M219 M371 M3$_{b}$	3
M388 ⌜M312⌝ M380$_{b}$	3
M388 M347 [...]	3
M388 M387 M263 M110$_{b}$ M371 M351+1N$_{14}$ M3$_{b}$	3
M388 M66 M262$_{1}$ M3b	3
M388 […] M4 M218	3
⌜M388⌝ M377 M109 M228$_{x}$	3
M388-second headers	
M149$_{a}$ M388 M218 ⌜M295⌝	2
M149$_{a}$ M388 M218 […] M54	2
M218 M388 ⌜M332$_{d}$⌝	2
⌜M332$_{d1}$⌝ M388 M332$_{d}$ M4 M419⌝	2
M203$_{c}$ M388 ⌜M242$_{b}$⌝ M347 M66 M301	3

M54-final headers	**RT**
M97$_{f}$ M218$_{b}$ M250$_{ba}$ M54	1
⌜M217⌝ M371 M54	1
M352$_{o}$ M96 M218 M54	1
[...]⌜M54⌝	2
M175+M131$_{a}$ M54	2
M175+X ⌜M310 M54⌝	2
⌜M54⌝	2
[…] M320 M54	2
M387 ⌜M049$_{d}$⌝ M128 M54	3
M54 other position header	
[...] M54 M386$_{a}$ M370 M373	2
incomplete headers	**RT**
[…] M218 M3$_{b}$	1
[...] M106+M288 M66$_{a}$	2
[...] M5$_{a}$ ⌜M297 M218 M072 M097$_{h}$⌝	2
[…] M297 ⌜M72⌝	2
[...]⌜M4 M387⌝ M218 M376$_{x}$	3
⌜M249$_{x}$⌝ [...]	3

Figure 6.29: Unit header ('overseer') designations in three very long ration texts. As the groupings here show, the overseer designations follow one of six or seven patterns (beginning with M124, beginning with M388, having M388 second, etc.).

Figure 6.30 very long 'Ration Text 3' (Dahl et al. 2018) MDP 17, 292.

'Elite' M388 in MDP 6, 5242

In the 'elite rationing' text discussed in chapter 5b (MDP 6, 5242), M388 appears clustered through the first third of the text (fig. 6.32a). The distribution of this and other signs (for example M1 and M9, figure 6.32b) in the text suggests an internal structuring reflecting a social or administrative context that is unclear to us. M388 in this text often appears after one or two 'household' signs, especially the M305 series[148].

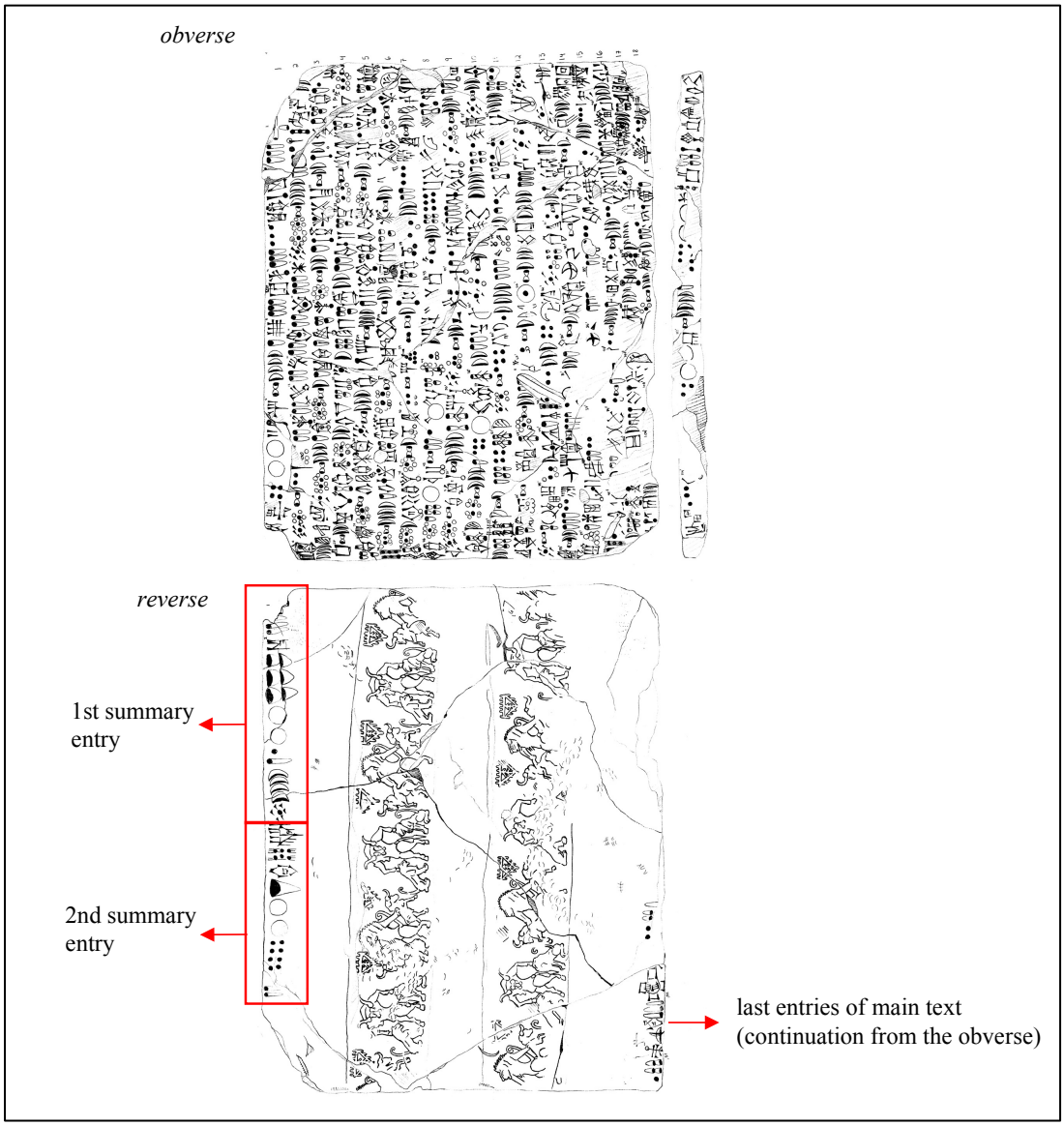


Figure 6.31 Text MDP 6, 5242 an 'elite' rationing text of over 110 entries.

[148] M305:

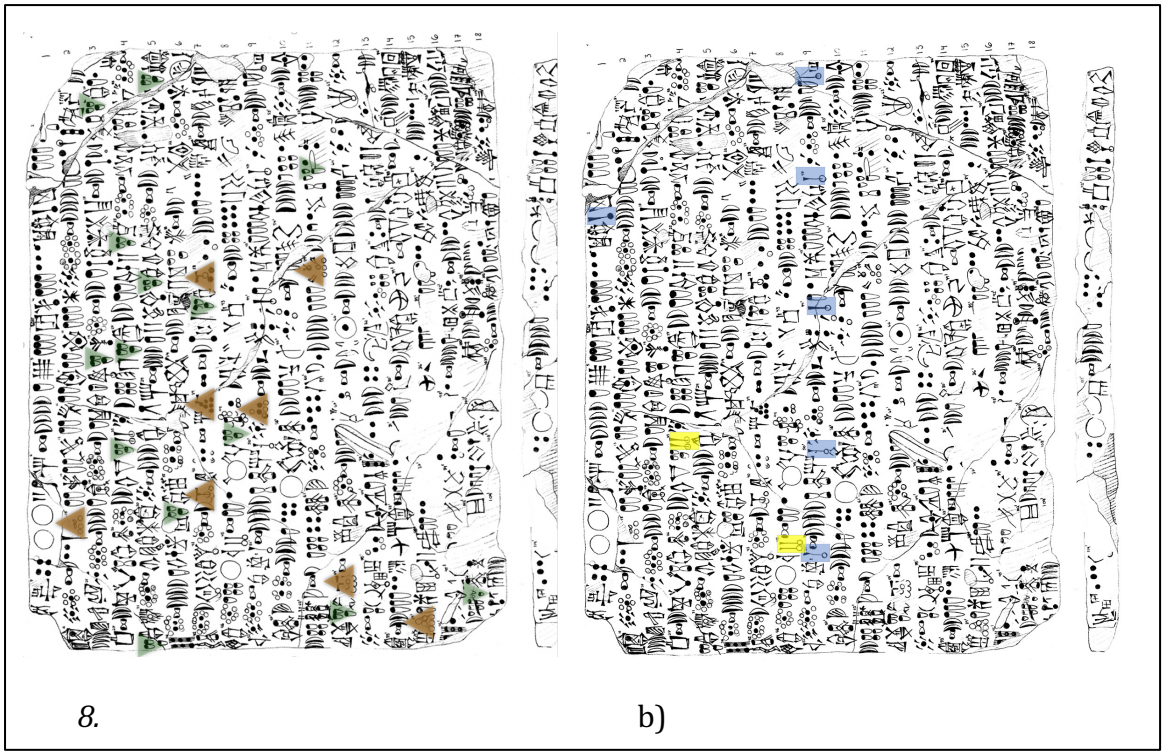


Figure 6.32: The obverse of MDP 6, 5242 is presented twice with different signs highlighted in each. A) shows the distribution of M388 (green)and M381–M383 (orange); b) highlights $M1_b$ (blue) and M9 (yellow). The clustering of similar signs in sections of the text suggests an internal ordering to the text entries.

Proto-Elamite M381–385

M381 $M383_a$

The sign that is graphically most similar to proto-cuneiform KUR_a is M381. Variants on this sign (in Dahl's working signlist $M381_e$–$M385_f$) are formed from three to seven circular impressions, with various other strokes and shapes added to modify the sign. Some of these are very similar to glyptic depictions of mountains with vegetation

springing from them. The forms with six circular impressions creating a 'mountain' shape are graphically similar to proto-cuneiform $LAM_{a\text{-}b}$, although their meanings have not been proven to be similar.

M381 is used in around 20 texts in diverse contexts. M383 and variants appear in around thirty texts, sometimes as the only sign in an entry, sometimes in short sign sequences. These sequences are divisible into three groups: those in which M383 is in the 'first' position in the sign sequence (eight times, all distinct sequences); those in which M383 is either inscribed inside or written along with M362, possibly the sign for female goat (five times) (Dahl 2005a: 91); and two outliers. One of the outliers has M383 'framed' by two signs (M54, the 'yoke' sign for workers, and M377, a typical 'household' sign frame), and followed by M388 in an entry as follows: M54 M377+M383+M377 M54 M388. The other is a unique sequence: M304 $M146_d$ $M383_n$ $M151_c$ —neither the whole string, nor M304 M146 ever occur elsewhere in the currently known proto-Elamite corpus.

The combinations with M362 may reflect 'mountain goats' or wild goats (for example the *Capra aegagrus,* documented in Fars [Potts 2016: 30 fig. 2.3]), although whether as counted objects or other symbolic reference is not clear. For example, it may be relevant to compare the proto-Elamite (and following periods) seal motif showing a mountain—made by circular impressions similarly to M383—with goats rearing up its side (fig. 3.8c). In addition, the possible attestation of $M383_c$ $M418_b$ (the latter sign is an equid head) may represent another 'mountain' animal, similarly to Mesopotamian designations for equids with KUR_a[149].

[149] ANŠE.KUR for 'true horse' is not certain until the Isin-Larsa period (Zarins 2014: 163, 170).

M383$_{j}$ M260$_{1}$
⌜M383$_{c}$⌝ M001
M383 M209$_{d}$ […]
M383$_{c}$ M418$_{b}$
M383 M1 M320
M383 M354
M383$_{e}$ M387$_{h}$
M383 M388 ⌜M301⌝ M377$_{e}$ M218 M288
M362+M383$_{c}$ (attested 3–4 times)
⌜M383$_{e}$ M362⌝
M54 M377+M383+M377 M54 M388
M304 M146$_{d}$ M383$_{n}$ M151$_{c}$

Figure 6.33 Sign strings with M383$_{(x)}$

M388 and early Iranian labour organization traditions

While this dissertation compares proto-Elamite and proto-cuneiform scripts, and includes references to later Mesopotamian cuneiform to help clarify, this can also have the effect of seeming to put proto-Elamite into a 'Mesopotamian' context. This method is partly inevitable due to the relative scarcity of Iranian written sources for labour organization until the first millennium BC. However, the comparisons may not be as entirely as Mesopotamia-centric as they seem at first glance—after all, Gelb's reconstruction of the classical 'Mesopotamian' rationing system drew heavily on textual evidence from Sargonic period Susa (1965: 232 ff.).

Another way to re-center the discussion on Iranian labour organization traditions (whatever their complex sharing of traditions with Mesopotamia) may come from comparison with much later Elamite cuneiform rationing and personnel transfer texts, that attest an Elamite word for workmen or dependent workers, *kurtash*[150]. These workers, who have been described as 'dependent' (Aperghis 2000; Hinz and Koch 1987) were

[150] Hinz and Koch (1987: 534) consider the word of Old Persian origin, and Khačikjan (1998: 12) groups it with a few other Old Persian loans into Elamite with –aš ending, that are all 'connected with agriculture'.

sometimes classified by gender and age, by craft specialization and/or by geographic origin, and are attested in both small and large groups in administrative documents from Persepolis (509 to 494 B.C.E) often along with food and drink distributions (Briant 2013: 18–22; Hallock 1969). From the Achaemenid period, Akkadian text (YOS 7, 187) records a team of 40 workers sent from the Eanna temple in Uruk to a town probably nearby Persepolis for agricultural labour (Henkelman and Kleber 2007). Aperghis (2000) suggested that the amounts of food recorded suggest that malnutrition led to the deaths of some of these workers, a view questioned by Tuplin (2002: 317–18), and echoing similar debates in Mesopotamian 'rationing' contexts. The continuity and changes in labour-organization traditions in Iran are difficult to trace in the ancient Near East because of the patchy textual record.

Summary

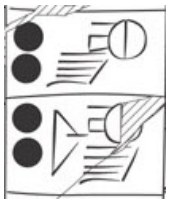
M388 may have been a generic sign for 'man' associated with the many proposed anthroponymics identified in rationing texts and rosters (and without, it is noted, parallel uses of M72— 'female'—in similar anthroponymic sequences). Either no females were involved in these many redistributive contexts including M388, or the classifier M388 functioned as a social designator or lexeme inclusive of both men and women, in a similar manner as English 'person', or Sumerian 'lu$_2$' which is gender neutral despite the possibility of adding munus to clarify. For M388 however, the specific implication 'male' *is* apparent in the confined group of complex graphemes that designating male children in contrast to female children. In order to take M388 as a gender-neutral indicator for 'person' we may have to understand that M370$_b$+M388 and M370+M388+M370 represent 'young person (of the M388-class)'—and that M370$_b$+M72 and M370+M72+M370 were therefore shorthand writings of this, namely 'young female

(person of the M388 class)'. Alternately, if M388 does in fact explicitly represent 'male' in both situations, the extremely prolific use of M388 in proto-Elamite record would indicate that scribes were overwhelmingly concerned with the organization of male personnel. Finally, while some of the texts show that M388 can represent nameless, counted workers in the decimal system, the greater number of uses of M388 are accompanied by complex designations in the forms of as-yet undeciphered sign-strings and are hypothesised to represent names of personnel of differing whose social class remains unclear.

Chapter 7a: SAL in proto-cuneiform and female workers

Introduction

Identifying the sex or gender of workers, professionals, owners or other individuals in third millennium cuneiform administrative documents is sometimes more problematic than has been assumed (Garcia-Ventura 2016: 184 ff.). While oftentimes women are marked out with the sign SAL—sometimes as part of a personal name that is recognizably 'feminine'—this is not always the case. For both proto-cuneiform and proto-Elamite, professionals and officials are normally interpreted as men, unless SAL or M72 is included in a title. It is almost certainly not the case that all women in the proto-cuneiform administrative and lexical record were marked out with the SAL sign[151], although both the dependents referred to solely by their sex with SAL.(KUR_a) as well as individuals with some administrative or cultic titles (such as EN SAL, NINKUM) are explicitly visible in this way. An administrative text from Uruk (W 09168,h + W 09168,n) may highlight the viewpoint from which 'male' was sometimes an unexpressed 'norm', while 'female' was specially marked[152].



4. $2N_{14}$ $UKKIN_a$ ŠU
5. $2N_{14}$ SAL $UKKIN_a$ ŠU

Figure 7.1 W 09168,h + W 09168,n, unmarked male and marked female administrative personnel.

[151] for example, the sign $LAGAR_{a-c}$ probably denotes a female cultic individual, as indicated by comparison with later cuneiform tradition.

[152] This phenomenon of 'marking' the female of an occupation is also attested in Early Dynastic LU_2 E listing ^{munus}AGRIG, for which Zsolnay and Westenholz (2016: 21–2) suggest it might 'have been related to the differentiation in the Semitic languages, which do have grammatical gender ('the so-called Kish area')'.

Proto-cuneiform SAL as evidence for labour organization?

In order to establish the relevance of proto-cuneiform SAL to the study of labour administration, the current chapter must separate out the uses of SAL that refer to different kinds of women, animals, and other things. A significant observation is that sign SAL functioned as a sex (or gender) marker of women of both low and high social classes in proto-cuneiform, although some SAL and many SAL.KUR$_a$ recorded in the texts may have been of comparable social identities to the standard term geme$_2$ of third millennium Sumerian cuneiform (following Vaiman 1989). However, this is only one context in which SAL is used in proto-cuneiform.

In the proto-cuneiform texts, SAL is one of the most commonly used signs, prompting Asher-Greve (2008: 121) to write about the extent of slavery in proto-cuneiform texts:

> 'In seventh place follow female slaves with 338 entries . . . and there are 224 entries for humans, 113 for male slaves, 153 for 'ERIM' (perhaps designating prisoners of war or forced labourers comprising people from foreign places), and 197 entries for small persons ('TUR'). According to these statistics, a large segment of the workforce consisted of female and male slaves, prisoners or forced labourers, and children.'

G. Algaze similarly concluded (2013: 81):

> …the frequency of references to captive individuals in proto-cuneiform as a whole is quite high. Robert Englund (1998) notes that if one excludes non-numerical signs, the second most common sign in those texts is that denoting female slaves of foreign origin. Signs for captive males, while less common, are also quite frequent.

Unfortunately, the statistics cited by Asher-Greve and Algaze[153] have been misinterpreted. While Englund (1998) does cite the high frequency of the sign SAL in

[153] Algaze may be referring to Englund 1998: 70, where, however, SAL is cited as the 7th most common sign with 388 uses. This can be updated to around 700 administrative uses, based on the current CDLI catalogue.

proto-cuneiform, which he provided with its (occasional) interpretation 'female slave', this chapter shows that, like the KUR_{a-b} sign, the use of the SAL sign in proto-cuneiform can only sometimes be demonstrated with a degree of confidence to represent counted female 'workers' of comparable situation to later cuneiform $geme_2$ of worker lists. A fair amount of ambiguity remains in many of the contexts in which SAL is used, but by reasonable estimation many of the designations including SAL can be understood as:

- household, administrative unit, or geographic names
- personal names
- titles of (sometimes demonstrably high-status) cultic or administrative personnel (e.g. $EN_{a/b}$ SAL, SAL $SANGA_a$, NAR SAL A)
- the sex of animals
- groups of counted female workers or slaves (named or unnamed). These may be classed as $SAL.KUR_a$ or sometimes associated with a particular craft or household (e.g. SAL.GURUŠ; $SAL.KUR_a$ E_{2b} NAMEŠDA)

The separation here between cultic personnel and 'workers' is admittedly an etic perspective, and simply classifying individuals as 'lower-class', 'low-status' or 'dependent' is fraught—for example, how does one assess the status or class of the count of forty $UNUG_a$ SAL, 'female personnel of Uruk' in association with 120 rationed consumables (W 19591,a)[154]?

This chapter therefore outlines the contexts in which SAL may represent counted women or women receiving rations, exploring possible production contexts similar to those known from third millennium cuneiform texts —these may include occasional references to agriculture, weaving, and grinding grain. It also outlines the uses of SAL for a diverse range of human, animal, and household or other designations; as chapter 7b shows, this presents an important contrast with the narrower use of the female sign M72 in proto-Elamite.

[154] Grain products, cheese or fish may be recorded in this system (Englund 1998: 118).

The SAL sign

The sign ZATU 443 is conventionally referred to as SAL (Green and Nissen 1987: 267 also listed as 'MI$_2$, MUNUS'). This sign name is drawn from Sumerian /sal/ meaning 'fine, thin' and may not have been the most accurate choice of sign name for proto-cuneiform since the meaning in proto-cuneiform is usually or always 'female' or 'woman' (Bartash 2014: 13 n. 17). However the name is retained as convention here (and in lieu of any proven link between proto-cuneiform SAL and a Sumerian lexeme such as geme$_2$, contra Bartash 2014). The actual object depicted is the 'pubic triangle'[155], and in Sumerian the term for vulva is written with this sign with a reading gal$_4$ (more often written gal$_4$-la in Old Babylonian texts), Akkadian *biṣṣūru*. In later cuneiform, the sign can have the meaning 'woman' (Sum. Munus / Akk. *Sinništum*). Krecher (1987) proposed a Sumerian lexeme /eme/ 'female, woman' that would be represented by the abbreviate reading mi$_2$ for the sign SAL.

Sallaberger (2014) notes that women designated with the sign DAM (a sign incorporating the element SAL) were among those at Tell Beydar (Early Dynastic IIIb) engaged in agricultural work and in 'grain expenditure documents', while a separate designation, geme$_2$ (wr. SAL+KUR) is known from that corpus to refer specifically to female slaves, a situation probably similar across primarily semitic language contexts of the Early Dynastic periods (see Sallaberger 2014: 43). He suggests that in the Sumerian-speaking environments of Southern Babylonia however, geme$_2$ (wr. SAL+KUR) functioned as a general term for women, including slaves and others. This differs from Gelb's suggestion that, 'the term geme$_2$ denotes women of dependent status, from slaves to serfs,

[155] That is, the pubic area including the *mons veneris* and the external-most indication of the vulva.

contrasting with the term SAL, which, generally, is used for women of, more or less, independent status, from wives of rulers and ladies of the court downward' (1973: 83). The latter assessment aligns more closely with the proto-cuneiform evidence, in which SAL.KUR$_a$ was more likely used as a term for particular slave women or captives, than as a general term for 'woman', for which the sign SAL seemed to be able to function—although bookkeeping formats and a possibly loose association between signs and lexemes in proto-cuneiform complicate the picture.

The cuneiform sign SAL is also used in titles of female professions and offices (see most recently Lecompte 2016) and can also indicate 'female' for animals. With the reading /sal/ it also has a Sumerian meaning 'fine, thin' (also sometimes written with the graphically similar sign SILA$_3$, with the reading sal$_4$) and 'wide' / 'to become wide' (akk. *Rapšu* / *rapāšu*). The eme-sal for munus is /nunus/ (wr. Nu-nus). Glassner includes this sign in his examples of metonymy in proto-cuneiform (a thing standing for an associated concept)—that is, 'pubic triangle' for 'woman/female'.

Problems with identifying female personnel

Charvát (2014b: 171–81) compiled a list of known uses of SAL in proto-cuneiform texts from Uruk and from MSVO 4 (including three texts of unknown provenance, possibly from Tell Uqair). His list excluded the texts from Jemdet Nasr and from private collections. The list highlights many of the uncertainties in interpreting the record. For example, he asks of W 9655, s 'are SAL SU animals?'; and often the tentative translation 'servile personnel?' makes the ambiguity clear. However, some of the 'translations' that are presented as though they could be read with certainty are in fact only speculative. Charvát reads the short GU$_7$ text W 20511,7 as a 'record of expenditure to

'ploughwomen'' based on its colophon: APIN$_a$ SAL GA$_{2b}$ x DUB$_a$. Charvát's translation, however, must contend with the use of SAL GA$_{2b}$ x DUB$_a$ as a place-name in the lexical tradition as well as other administrative texts. Another important ambiguity is whether SAL refers to humans or animals, as in the 'equid texts' of unknown provenance published in the volumes CUSAS 1, 21, and 31 (Monaco 2007; 2014b; 2016). Crucial to understanding the uses of SAL is attention to the systems of cases and subcases, since the meaning of proto-cuneiform signs is often dependent upon clarification in a colophon or other format and contextual clues.

Methodology for identifying SAL as workers or dependent women

After separating out uses of the sign SAL that are understood to represent other things, several criteria are used here to identify uses of SAL that may represent female workers, slaves or household dependents. These are:

1. The sign SAL stands alone in a case and is counted in the sexagesimal system
2. The sign SAL is paired or paralleled with GURUŠ
3. The sign SAL is paralleled in other cases with KUR$_a$, (ŠA) TUR and or/ SAL/KUR$_a$.TUR
4. SAL (and sometimes KUR$_a$) are counted in the body of the text and summarised in the text colophon as SAL.KUR$_a$
5. Sexagesimally counted SAL in a case are attached to the same number of 'sub-cases' including designations that may be 'personal names'
6. The colophon of a text including counted entries with SAL in the designations is summarised with SAG SAL (W 19416,b) or SAG x MA (MSVO 1, 212–214 fig. 5.12)
7. Specifically for Uruk IV receipts with small numerical notations, SAL is the closest sign to the numerical notation and no other 'counted objects' are recognized (unless paralleled with KUR$_a$ or GURUŠ). This category is the most uncertain (see below figure 7.3)

This methodology excludes a small number of texts that use SAL in mixed personal designations that might in fact reflect named women receiving rations. The results of the analysis are presented in figure 7.2

Uses of SAL in proto-cuneiform

Lexical Texts

Period	Provenience	total uses	in # texts	= female worker or slave(?)
Uruk IV	-	0	0	0
Uruk III	Uruk	18	15	1(?)[156]

Administrative Texts[157]

Period	Provenience	total uses	in # texts	= female worker or slave(?)
Uruk IV	Uruk	69	55	19[158] *+16 unclear 'receipts'*
Uruk III	Uruk	233	168	13
Uruk III	Jemdet Nasr	60	27	18
Uruk III	Tell Asmar	1(?)	1(?)	0
Uruk III	Unprovenanced	130	83	7[159]
Uruk III	Kish	0	0	0

Figure 7.2: A small number of the uses of SAL in proto-cuneiform offer strong evidence that they refer to female workers or slaves in labour or human resource bookkeeping contexts. The remainder of uses of SAL may reflect various animal, human, geographic or other designations.

All of the texts that give reasonable indication that they use SAL to count dependent females are described in the catalogue in the following pages (263–72). Nearly 60 texts are identified here; 16 more uncertain 'receipts' are discussed on pages 282–5. At this stage of decipherment, it is not always possible to determine whether the appearance of

[156] Possible witness to AD-GI$_4$ (P000709), see comments on page 312.
[157] The final category in figure 7.2 represents the number of texts in which circumstantial evidence suggests that the sign SAL appears to represent a counted woman or group of women, and includes the use of SAL.KUR$_a$ when it may refer to counted women; it excludes 'naming' cases in which SAL appears to be part of a personal name or title. The cited 'total uses' of the SAL sign excludes the use of SAL as part of NIN (SAL + NAM$_2$), and NINKUM.
[158] See 'Uruk IV accounts with SAL…' pages 262–66, plus 'receipt' W 20854; for the 16 unclear receipts, see section 'Uruk IV receipts: female slaves or high status women?'.
[159] Not included in descriptive catalogue below. The texts are: CUSAS 31, 26; 27; 111; MSVO 4, 29; 67; MS 2440 ; and MS 2840.

SAL indicates a counted female slave, worker or woman of other status—or whether the sign is used in another way. A few texts below are included that might in fact record cattle (e.g. W 20891,1).

Uruk IV accounts with SAL as female workers: Descriptive catalogue

In the texts of the descriptive catalogue below, one can find several different roles for individuals counted as SAL. These include probable slave or dependent designations; rare, possible references to millers/ grinders, agricultural workers, textile workers and brewers among perhaps some other cultic and administrative personnel. Uses of SAL in official's titles and cultic personnel are, for the most part, not included in the descriptive catalogues, which aims to identify possible dependent workers. However, such 'higher status/class' individuals may have formed a significant part of the 'human resource' management undertaken by proto-cuneiform scribes.

Uruk IV accounts with SAL as workers: Descriptive catalogue[160]

Text	Description	Relevant signs
W 6710,a / P000813 (fig. 5.9a)	A count of 48, probably in the sexagesimal system. Six different categories are provided with numerical notations. Five SAL are counted in parallel to the five other categories. Summary includes only a numerical notation on the reverse.	**SAL** = parallel 'personnel' category to: **ZATU 678 ERIM$_a$** **ZATU 678 ZATU 765** (depicts a hand mixings something in a container) **ZATU 718 ?** **PAP$_a$** **URUDU$_a$ […]**
W 9311,a / P001156	List of 22 personnel or livestock categories. The first seven categories, three of which include the sign SAL, finish with a case reading UNUG$_a$ (Uruk). Double dividing lines then separate out two(?) further sections of the list, including two livestock designations ⌜KU$_{3a}$⌝ U$_8$ and UTUA $_a$ KU$_{3a}$. Pietkan-Hinz (2011: 344–45) for proto-cuneiform designations of Zebu (*Bos primigenius Taurus*) including the sign ZAG.	**SAL NUN$_a$** **SAL GURUŠ$_a$** **SIG$_7$** **SAL ZAG$_c$** **NUN$_c$ =** summary/accounting context. See below W 20044,8.
W 9579,l / P001259	Single-sided receipt for 'baskets of fish' (Wagensonner 2015) for the EN$_b$.SAL and SAL, listed in parallel cases. Probably counted in the sexagesimal system, '6 baskets of fish, the EN$_b$ SAL; 5 baskets of fish, the SAL'.	**SAL** **SAL =** female personnel of the EN priestess? **EN$_b$ SAL** = EN priestess?
W 9656,ef / P001550	Account of 13 SAL.KUR$_a$ qualified in the summary along with the signs BU$_a$ DIM$_b$ A ZATU 758 (a yoke?). Three 'groups' on reverse are summarized with a few SAL and a few KUR$_a$ each. Obv. Col i. 2b[161] designates the group of two SAL and one KUR$_a$ as SILA$_{4b}$ DIM$_b$ (see also MS 4488), raising the possibility that this could be an account of sheep. The designation NUN$_a$ GA$_a$ in obv. Col 2. 1b also appears on an unclear account (W 20907, 2) involving six KUR$_a$, with the first line listing a NIMGIR SI, the possible 'herald'.	**SAL** **KUR$_a$** **SAL.KUR$_a$** **SAL.KUR$_a$** = mixed females and males

[160] Excluding the ambiguous 'receipts'.
[161] Following CDLI transliteration convention.

W 9827 / P001684	A receipt of 211 + […] unnamed SAL.KUR$_a$. The obverse is only about half preserved, and shows two cases, the first with 23 BA SAL.	**SAL.KUR$_a$** = mixed SAL and KUR$_a$? **BA SAL**
W 20364,1 + W 20364,2 / P003675	Colophon on the obverse reading KAŠ$_b$ AN MUŠ$_{3a}$ [...] may indicate the text relates to ale distributions associated with personnel of an Inana temple. GEŠTU$_b$ appears in the first case, opposite the numerical notation from SAL, and may relate to an account context including 'middle-ranking officials' (Johnson 2015: 175)	**SAL**
W 9578,e / P001237	Count of seven (?) different categories, possibly personnel designations. Surface is poorly preserved and several readings are uncertain.	**SAL SANGA$_a$**= Female Sanga-administrator **SAL$_a$ GA$_a$** = ? (note LU$_2$ titles composite 20 and 21, GAL$_a$ GA$_a$ and SIG$_{2b}$ GA$_a$) **SAL TE** = personnel designation ? **1N$_{58}$ BAD$_a$** = personnel designation ? **SAL 1N$_{58}$ BAD$_a$** = female personnel designation?
W 15776,b / P002380	Fragment of an account with 3 N$_1$ SAL counted in parallel to other categories (not preserved). The small part of the numerical summary preserved, 1N$_{34}$ 2N$_{14}$ […] is ambiguous and could be either sexagesimal, capacity system or mixed account. SAL is the only non-numerical sign preserved on the fragment.	**SAL** [...]
W 19591,a / P003261 (unpublished)	The notation N$_{51}$ in the first entry represents a unit in the bisexagesimal system, ('120' + x?). This system is thought to reflect a 'rationing' tradition, usually counting discrete objects in the form of grain, cheese or fish. The three entries of the text may be in the sexagesimal system, totaling 40 'personnel' of three categories two of which are partially legible: […]⌜GI NI⌝ AN ZATU 659 ZATU 659 ; ⌜MUŠ$_{3ag}$⌝. If 120 represents the entire numerical notation in the first case, then the account records only 3 of the unspecified items to be distributed to each of the 40 personnel.	**UNUG$_a$ SAL** = female personnel of Uruk?
W 20719,1 / P004027	Fragment of account enumerating groups of females (SAL) and males (KUR$_a$) separately. There are 18 [+ x] females and 23 males. The colophon is not preserved.	**SAL** **KUR$_a$** =female and male (humans or animals?)

W 20831,3 / P004085	Fragment of accounting, that might enumerate different 'categories' of females. 12 + X SAL with a separated additional designation ⌜HI_{ga}⌝; 2 AMA SAL; and 3 KUR_{gb} which in the lexical tradition may represent a jarred product.	**SAL** **AMA_a SAL** **KUR_{gb}**
W 20891,1 / P004106	One ($1N_1$) SAL (?) —the sign form is elongated. It is counted next to $5N_2$ with no ideographic designation (possibly implying 'specially marked'/dead SAL). A total of 6 appears in the next case, with the designation ŠU GURUŠDA NE_b. Both NE and ŠU are in some contexts designations of cattle 'hybrid' and 'grey'respectively (Pientka-Hinz 2011: 330, 335).	**SAL?** =woman or cattle designation? **ŠU GURUŠDA NE_b** = cattle fattener of grey and hybrid animal (speculative translation)
W 21336 / P004373	Fragment counting $8N_1$ + x SAL GUM_b. Context lost.	**SAL GUM_b** = women who grind/crush grain with mortar and pestle? (GUM = $naga_4$ / *esittu* 'pestle')
W 20044,8 / P003409 (unpublished)	The first case (probably NI_b rather than CDLI 'GAR') records 60 jars of dairy fat; the second case, 10 jars of ale (possibly sexagesimal notations). — provisions for SAL NUN_b. The use of the sign NUN_b possibly relates to Uruk IV NUN_a as a designation of 'lower level' of administrative offices within a given bureau (Johnson 2015: 174 ff.)	**SAL NUN_b =** **1)** female personnel of the household or personnel status NUN_b OR: **2)** and individual with personal name or title SAL NUN_b (see above W 9311,a for SAL NUN_c)
W 20920,2 + W 21054,1 / P004135	Fragmentary mixed account, including some titles or personal names (EN_b $ŠU_2$; SUKKAL ZATU 651) and some apparent products (GUG_2 $ŠE_a$ breads?). There is no numerical summary preserved so the numerical system(s) is/are uncertain. The reverse colophon preserves only the sign AB, so it may be understood as an account of a particular city household.	**SAL $ERIM_a$ =** female personnel?
W 9656,dn / P001532	Short count divided into two cases: $3N_1$ + x BU_a; and ⌜$1N_1$⌝ (? Or $1N_{14}$) SAL […] AB_a. These are totaled together on the reverse with the numerical notation and no ideographic signs preserved.	**SAL[…] AB** **BU_a** = a category parallel to SAL. See also *archaic vocabulary* BU_a SAL ; administrative texts W 15775,o + W 15775,v and W 21608.

W 07024 / P000928	Account of textiles for different persons or households, or for different purposes. The SAL in this text is anunceratin reading (following Englund 1994) —the case may read only $UŠ_a$). If SAL were present, the possibility that the combination represents female personnel related to later Sumerian karkid (wr. SAL.UŠ)	⌜**SAL**⌝ **$UŠ_a$** = sum. Karkid? (cultic personnel sometimes associated with prostitution)

Uruk III texts that may record female workers with SAL

Texts from Uruk

Text	Description	Relevant signs
W 19416,b / P003183	Fragment of account with 8 SAG SAL split into 'categories' : 4 GI_6 AMA_a, 2 NA_a AMA_a SAL and 2 $IŠ_a$ KU_{3a} . Unusual signs resembling LAGAB are used in the subcases instead of N_1.	**SAL** **SAG SAL** = female slaves **GI_6 AMA_a** = ama-gi$_4$ (?) **NA_a AMA_a SAL** **$IŠ_a$ KU_{3a}** = categories of women?
W 15775,k / P002358	Fragment of account, enumerating 8+ unnamed SAL in the upper section; perhaps counting grain in capacity measures in the lower section, including the sign ZATU 659, a sign interpreted by Friberg (1999:17) as relating time and labour costs, '1 day of hired work?')	**SAL** **ZATU 659** = 'day of hired labour'?
W 22104,3 / P004554 See Appendix II.ii, 'Uruk III texts recording children'	'Receipt' of four women, one male child, and one female child – unnamed and summarised as $SAL.KUR_a$ and associated with the household UB IB_a $UNUG_a$.	**SAL** **$SAL.KUR_a$** **KUR_a** **KUR_a $ŠA_{3a2}$ TUR** = infant boy **$ŠA_{3a2}$ [SAL TUR]** = infant girl **UB =** household or place name common in Jemdet Nasr texts **IB_a =** 'household?' (Englund 1998: 70) **$UNUG_a$ =** Uruk (Englund 1998) / or more generally 'the city' (Michalowski 1993)
W 23999,1 / P004735	Account of eight $SAL.KUR_a$ associated with an EN_a official and perhaps a reference to a cultic festival of Nanna, EN_a $EZEN_b$ AN HI URI_{3a} ZATU 774.	**SAL** **$SAL.KUR_a$** **KUR_a** **$ŠA_{3a2}$ TUR** = infant

W 24214,3 / P004957	Fragment of a large administrative list of unclear nature. The colophon reads: ŠU GIBIL NUN_a KU_{6a} […] $3N_{57}$.SAL E_{2b} NAMEŠDA X […]	**$3N_{57}$ SAL E_{2b} NAMEŠDA** = 'SAL.KUR_a (?)' of the house of the NAMEŠDA
W 17729,fg / P002789	Fragment of account including cases and naming subcases: the first category includes 3 SAL UR_5, with two of presumably three subcases preserved below; the second category is two SAL $ŠA_{3a1}$.	**SAL UR_5 =** 'miller/grinder' (?)[162] / sum. $Geme_2$ ar_3-ra (UR_5 = ar_3) — or HAR-(tu) (dependent female domestic)? **SAL $ŠA_{3a1}$ = '**female infants' (?) uncertain.
W 17729,eu / P002777	Fragment, apparently of a colophon, with 2 + […] SAL.KUR_a and $SILA_{4a}$ BA; and the edge of what may be a subcase below further enumerating SAL.	**SAL(?); SAL.KUR_a**
W 20274,57 / P003555 (unpublished)	A partially preserved GU_7 ('provisioning') account associated with the city Šuruppak (mod. Tell Fāra). The first two cases on the obverse may include products: ZATU 764 'mats'? (Charvát 2014a: 93) and $DARA_4$ TUR_{3a} (?); the third provides the numerical notation $3N_{14}$, probably a sexagesimal system notation meaning '30', and SAL GURU$Š_a$ 'female workers?'. This text therefore may include provisions for 30 female workers for a year.	**SAL GURU$Š_a$ = '**female workers' **U_4 x $1N_{57}$** = '1 year' **GU_7** = 'provisioning'
W 21662,2 / P004431 (unpublished)	Fragment of a complex mixed account of various products (dairy, textiles, pots?, ropes?, fruit) and designations of officials (e.g. KINGAL $SANGA_a$). The sexagesimal or bisexagesimal count $1N_{34}$ $1N_{14}$ = '70' with HAŠHUR $ZABALAM_a$ SAL $KISAL_{b1}$ could indicate a gift of 70 strings of dried fruit from or for the female personnel of (a temple household of) Zabalam.	**HAŠHUR $ZABALAM_a$ SAL $KISAL_{b1}$ =** fruit for/from the female courtyard personnel of (the temple of Inana in) Zabalam?
W 24004, 3b / P004747	Fragment of a list of women (SAL) associated with different cities (Uri_5 = Ur; $Ararma_2$ = Larsa; $Arina_x$); Colophon on the reverse summarises these as 20 [+ x] SAL.KUR_a and includes a broken designation ŠU AB […]	**SAL** = female personnel, sent between cities (?) **SAL.KUR_a** = female (and male?) personnel

[162] contra Charvát, who interpreted SAL UR_5 in this text as 'birds?' (2014b: 175).

W 17729,bp + W 17729,bx / P002694	A fragment of an account enumerating SAL.KUR$_a$ 'personnel' for the household ZATU 737 x SAL. Workers are divided by age and sex, with only the case for men (?) and male infants preserved. The format suggests further 'naming' subcases were included.	**SAL.KUR$_a$; KUR$_a$** **ŠA$_{3a1}$ TUR (KUR$_a$) =** male infant **ZATU 737 x SAL =** 'textile workshop'?
W 21045,1 / P004205 (?) (unpublished)	A list of products (livestock, fish, and personnel?) for unclear purpose, perhaps in the sexagesimal system; no text colophon preserved. The first entry of the text includes 1 (?) GURUŠ$_a$ SAL	**1N$_1$ DUG$_{cx}$ x 1N$_{57}$ (?)** **GURUŠ$_a$ SAL =** female worker(s)
W 15770,y / P002254	Fragment of larger account. The format is complex, divisible into different parts: a sub-colophon reads 6+ SAL.KUR$_a$ divided in subcases into SAL and KUR. The place-name SAL GA$_2$+DUB appears in this sub-colophon. Unclear (named?) uses of SAL and KUR$_a$ appear in the fragmentary cases of the other part of the account.	**SAL ; KUR$_a$; SAL.KUR$_a$** **TUG$_{2a}$ E$_{2a}$ SAL =** garments of/for the women's house? **SAL GA$_2$+DUB =** toponym

Texts from Jemdet Nasr

Text	Description	Relevant signs
MSVO 1, 1 / P005068 fig. 5.1d	The **GURUŠ$_a$ SAL** appear in subcases to each of the fields, counted in groups of twenty and forty. The number of labourers is, as expected, larger for the larger-sized agricultural lands.	**GURUŠ$_a$ SAL** = male and female field workers?
MSVO 1, 26 / P005093	Account of the 'city' NI$_a$.RU, with capacity measures in four separate cases. The undeciphered sign combination NINDA$_2$ x ZATU 659 qualifying these in the fifth case and the colophon may reflect a grain equivalency calculation (Englund 2004a: 38), with ZATU 659 possibly reflecting 'one month of hired work' (Friberg 1999:17).	**ŠE$_a$ 3N$_{57}$ SAL** = grain for the SAL.KUR$_x$ workers? **NINDA$_2$ x ZATU 659** = grain required for one month of hired work?

MSVO 1, 44 / P005111	Emmer wheat distribution (?) account with 14 + recipients. Four of the cases include designations with SAL (left), some of which may be officials or personal names, and others categories of lower-status female labourers. ZATU 751_a may sometimes be correlated with agricultural activity; it occurs in other texts with undeciphered sign DUR_2, with SAL.KUR_a, with $3N_{57}$.SAL, in accounts with agricultural land, and GU_7 texts.	**$3N_{57}$ SAL** = SAL.KUR_x workers? **PAP_a SAL** = PAP_a official (overseer of female workers?) **SAL SAL PAP_a** = female PAP_a official (overseer of female workers?) **SAL ZATU 751_a** = household or personnel designation
MSVO 1, 146 / P005213	Account quoting labour days, and $ŠITA_{a1}$ distributions to officials (including the SANGA NI_a.RU and SANGA AB); the sheep and fish designations on the reverse reflect the nature of the $ŠITA_{a1}$ distribution (Johnson 2015: 193). SIG_7 SAL […], appearing next to a broken entry including SAG, may be a single official, or a group of personnel. These entries and the following three are accompanied by ZATU 659 x $1N_1$ understood to represent 'one month of work'	**SIG_7(?) SAL** = female SIG_7 (?) **ZATU 659 x $1N_1$** = 1 month of work
MSVO 1, 154 / P005221	Account contrasting 21 $3N_{57}$.SAL GI and 12 BA. A time notation is poorly preserved in the reverse colophon.	**$3N_{57}$.SAL GI** = 'older (male and?) female workers' (speculative translation), *or* male and female workers associated with administrative context GI (contrasting with BA).
MSVO 1, 158 / P005225	Fragmentary short account or calculation. The case layout suggests SAL […] describes the cases before it, which include the sign GAR (grain distributions), a jar (DUG_a?) representing ale distributions, and a subcase providing the rate or equivalent of grain for each main case, set at 15 N_{30c} for each (here wr. $1N_{42a}$ $1N_{25}$, the capacity system Š* possibly barley groats). This amount corresponds (possibly coincidentally) to the common ration ($15N_{30a/c}$) observed in proto-Elamite distribution texts.	**SAL […]**

MSVO 1, 212 / P005279	Complex summary account combining entries from MSVO 1, 213 and 214. Totalling [27] SAG x MA […], and distinguishing in a subcase of the colophon between 17 SAG x MA SAL.KUR$_a$ and 10 (?) SAL.KUR ERIM$_a$ […].	**SAL.KUR$_a$ SAG x MA** = captive women and men **SAL.KUR$_a$ ERIM$_a$** = 'yoked' women and men
MSVO 1, 213 / P005280	Complex primary account with entries copied onto MSVO 1, 212.	**SAG x MA SAL.KUR$_a$** **SAG x MA KUR$_a$** **SAG x MA GEŠTU$_{c5}$** = parallel category **TUR PAP$_a$ MUNUS**= parallel category **KUR$_a$ PAP$_a$** = parallel category **TUR** = young person, parallel category
MSVO 1, 214 / P005281	Primary account with entries copied onto MSVO 1, 212.	**SAG x MA NIMGIR**= captives (presented by the NIMGIR?) **SAL.KUR$_a$** = female of KUR$_a$ origin/class **SAL.KUR$_a$ TUR** = young female of KUR$_a$ origin/class **SAL** = female
MSVO 1, 215 / P005282	Poorly preserved administrative list counting '14' between 15 cases (designations not preserved), and the summary '14' SAL ZATU 751$_b$ of the 'city' (AB$_a$) of UB. (See MSVO 1, 219 below with the same colophon).	**SAL ZATU 751$_b$** = household or personnel category Belonging to the **AB$_a$ UB**

MSVO 1, 217 / P005284	List of individual captives (?), one per case, with designations that may be personal names or other group identifiers. These individual cases do not use the gender or status designations SAL.KURa etc. attested in the accounts MSVO 1, 212–214, but the similar text colophon (SAL.[KUR$_a$] SAG x MA NIMGIR) show these were of similar accounting context. The household or city-name in the colophon is UB A […].	**SAL.(KUR$_a$) SAG x MA NIMGIR** = female and male (?) captives (presented by) the NIMGIR. Belonging to the **UB A […]**?
MSVO 1, 218 / P005285	Count of unclear nature, (possibly of animal herders?) with 'naming' subcases. Includes the title PA$_a$ AB$_2$ KI. 3N$_{57}$.SAL appears counted with 1N$_1$ in a case on its own, with unclear significance.	**3N$_{57}$.SAL** Belonging to the **AB$_a$ NI$_a$.RU**
MSVO 1, 219 / P005286	Fragment of short unclear list (including a counted SANGA$_a$ AB$_a$) with the colophon AB$_a$ UB SAL ZATU 751$_b$ (see MSVO 1, 215 above with the same colophon). 'Account of a labour force' after Englund and Grégoire (1991: 28)	**SAL ZATU 751$_b$** = household or personnel category Belonging to the **AB$_a$ UB**
MSVO 1, 220 / P005287	Short account of the AB$_a$ UB, recording 2 KUR$_a$ in the context DUB$_a$ GI. One of these is of the category AL (adult?) with the 'name UB ZI$_a$ and the other is of the category EN$_a$.TUR with the name 3N$_{57}$.ŠU. The role of SAL in this text, used in the other half of the colophon, is unclear. ŠU SAL is known from other texts (often with PAP$_a$) and may be a title or personal name. A NAM$_2$ KAB official is mentioned.	**AMA$_a$ SAL** (?) **KUR$_a$**
MSVO 1, 222 / P005289	Receipt of two KUR$_a$ SAL (note the placement of the signs is different from the typical SAL.KUR$_a$. The individuals are 'named' EN$_a$ PAP$_a$ X and SUKKAL GIR$_{3gc}$.	**KUR$_a$ SAL** = females of KUR$_a$ class/identity **GAL$_a$ SAL** = official responsible for two **KUR$_a$ SAL**

MSVO 1, 234 / P005301	Fragment of unclear account, including a case with $3N_1$ (numerical system not clear) E_{2a} $1N_{58}$.BAD_a SAL . This case is counted parallel to $2N_1$ GAR LA_2 SA_a and 2 AB_a TAK_{4a} KI GAR, also of unclear category. Another association between $1N_{58}$.BAD_a and SAL appears in Uruk text W 09578,e.	**E_{2a} $1N_{58}$.BAD_a (?) SAL** = ?
MSVO 1, 221 / P005288	Receipt of $1N_1$ NIM_{b1} SAL.	**NIM_{b1} SAL** = Woman from the highlands? (speculative translation)
MSVO 1, 94 + 124 / P005161	A combination of two mixed multi-year accounts of the AB NI_a.RU, tracking grain perhaps through various equivalencies (sheep and textiles are both named). $3N_{57}$.SAL appears in the second account (covering 5+ years) along with a grain notation, possibly representing grain expenditure to those personnel (or animals), totalling over 1,500 litres of grain.	**$3N_{57}$.SAL** = SAL.KUR_x, female personnel ? Belonging to the **AB NI_a.RU**

Female captives and/or slaves

Central to discussions of third millennium labour organization has been the suggestion that some sectors of the economy —particularly textile production and grinding grain— may have engaged large numbers of predominantly female captives from surrounding regions as slaves or encumbered labourers. The proto-cuneiform record is unlikely to provide representative information on the scale and details of society-wide slaving practices, but some observations can be made about the use of writing to track the movement of slaves, as well as possibly their labour, and the resources allotted to their upkeep.

Vaiman argued that the later Sumerian designation for female slaves, $geme_2$ (wr. SAL+KUR) was derived from a practice of recording SAL (females) of the status or type

KUR_a in proto-cuneiform, but remained ambiguous about the conclusion by other early Assyriologists that KUR_a indicated that these women were from 'the mountains'. The sign KUR_a in proto-cuneiform often relates to products of mountainous origin (chapter 6a), and KUR_a, along with the similar proto-Elamite M381–M383 series, may be related to the depiction of mountains in the glyptic of both Mesopotamia and Iran at the end of the 4th millennium (fig. 3.8). This evidence supports the commonly held idea that the writing for 'slave' (SAL+KUR) reflected a regional dynamic already present in the late fourth millennium, in which women of the KUR_a identity (Early Dynastic and following $geme_2$) were often of a status identifiably lower than ordinary women (Early Dynastic period munus or dam). The descriptive catalogue in this chapter shows that the opposition SAL and KUR_a is restricted in scale in proto-cuneiform but clearly demonstrated in a few texts that may reflect a slave trade. In addition to texts using SAL in contrast with KUR_a, 'slave trade' texts may also be identified in a few instances by the use of SAL along with the sign SAG or SAG x MA.

The correlation between KUR_a-status women and children

The 'slave trade' texts are identified as those that use KUR_a and SAL as contrasting, counted 'objects' in accounts (this excludes the unclear Uruk IV receipts). They also almost exclusively include children along with them, and are presented in chapter 8a as 'scheme 1: Gender and age' texts (page 365 ff.). Only a few possible texts may include counted SAL and KUR_a adults without children, although two are only fragmentary (fig. 7.3).

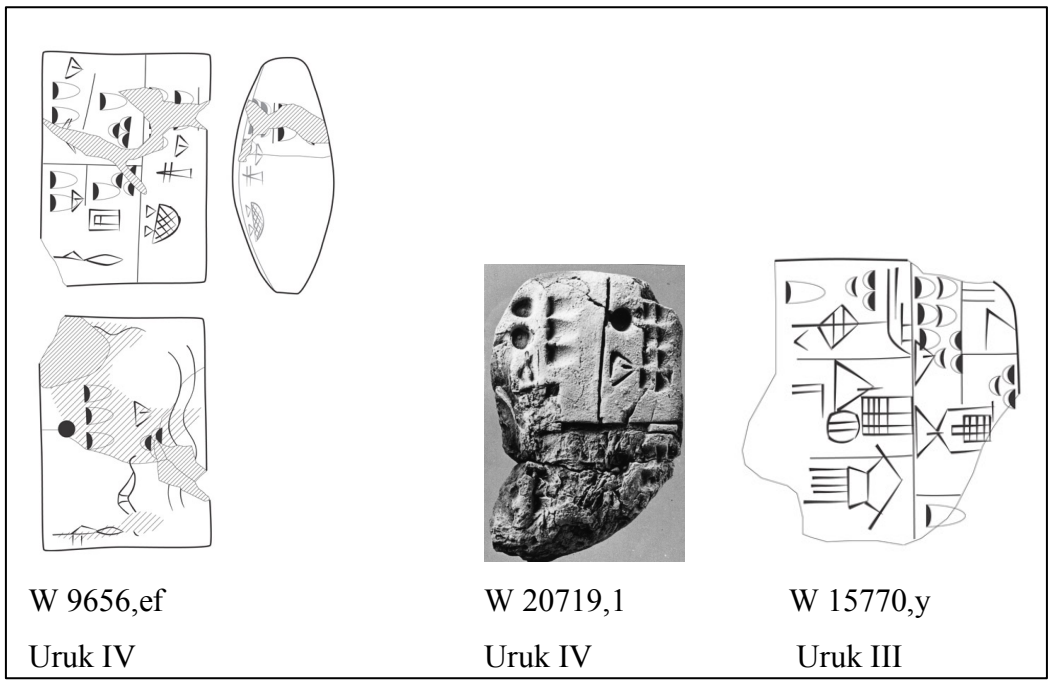


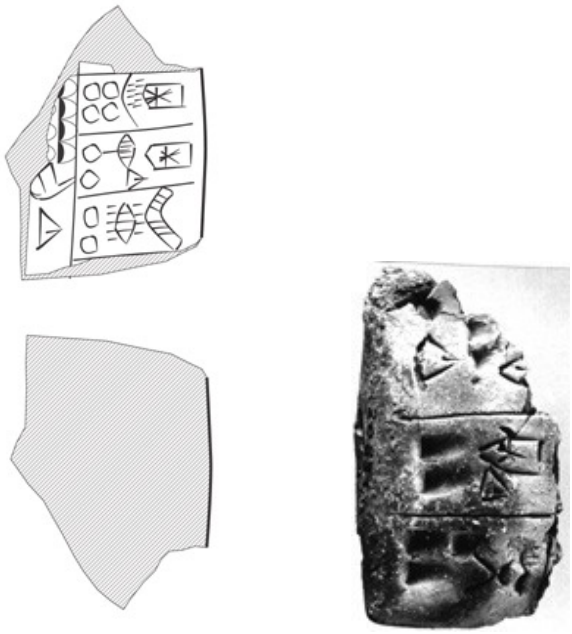
Figure 7.3: Adult male and female (KUR_a and SAL) texts from Uruk. These accounts are the only available evidence outside the unclear Uruk IV 'receipts' for directly contrasting SAL and KUR_a adults without children.

Are there more female than male slaves recorded?

In the proto-cuneiform documents there are a somewhat greater number of SAL.(KUR_a) women recorded than KUR_a men, as well as a much larger number of recorded SAL of varying social positions. Among the SAL specifically qualified as, or in association with KUR_a, it is most clearly in the Jemdet Nasr SAGxMA accounts that one can find a discrepancy between numbers of male and female captives recorded—with females well out-numbering males. At Uruk, the Uruk IV phase 'slave trade' account W 9656,ef records 8 females and 5 males, while on the other hand Uruk III text W 20719,1 (fig. 5.9c) shows 23 males and 18 females. Sometimes the ambiguity of the writing SAL.KUR_a inhibits interpretation of the number of male versus females of this status: for example, does partially preserved text W 9821 (fig. 5.9b) refer to 211 + 'women of the

region/status KUR_a', or does it represent an account of mixed males and females like W 23999,1?

One account may include only female (and no male) slaves, with the category SAG SAL divided between three more specific categories (W 19416,b, figure 7.4). In this fragment, the SAG SAL appear divided into four AMA_a GI_6, two NA AMA_a SAL, and two $IŠ_a$ KU_{3a}[163]. Analysing the possible interpretations of these combinations is part of the larger job of deciphering proto-cuneiform, although two of them including the common female naming-prefix ama- ('mother') may possibly reflect categories of female dependents.



W 19416,b (Uruk III)

W 20831,3 (Uruk IV)

Figure 7.4 Fragments of accounts from Uruk that may list categories of female slaves or other household personnel

[163] The numerical notations in the subcases with these categories are of an unusual 'drawn' form rather than being impressed.

Uruk III script phase: SAL contrasting KUR$_a$

The direct contrast between SAL and KUR$_a$ is already limited to a small genre of texts in Uruk IV proto-cuneiform; yet in the Uruk III script phase it is even more limited, with only five texts from Uruk that clearly record SAL and KUR$_a$ as contrasting counted objects in the body of the text (W 22104,3; W 23999,1; W 24214,3; W 17729,bp + W 17729,bx; W 15770,y). Several more texts use the designation SAL.KUR$_a$ discussed below, which may sometimes refer to women of KUR$_a$-status; however, the most important slave trade text W 23999,1 (Fig. 7.8) proves the use of SAL.KUR$_a$ in Uruk III texts in some cases almost certainly refers to groups of SAL and KUR$_a$.

	Case 1				Subcase 1	Subcase 2
Case	Numerical notation	Gender/Age	Category	Official/household?		
obv. Col. i. 1a.	$1N_1$	$SAL.KUR_a$	SAG+MA	ŠA E_{2a} $MUŠENx2N_{57}$	$ZATU\ 751_a$ $ERIM_a$	[…]
obv. Col. i. 2a.	$1N_1$	[…]	SAG+MA	⌜ŠA⌝ […]	DUR_2 $3N_{57}$ $ZATU\ 751_a$	AB_a ⌜TUR⌝ KU_{3a} $1N_2$
obv. Col. i. 3a.	$1N_1$	[…]	SAG+MA	ŠA MUŠEN E_{2a} […]	SI MA EN_a […]	$GIxKU_{b1}$ BAR
obv. Col. i. 4a.	$1N_1$	KUR_a	SAG+MA	ŠA $MUŠENx2N_{57}$ E_{2a}	UDU_a / KIŠ KUR_a	AMA_a MUŠEN MAŠ $ERIM_a$
obv. Col. i. 5a.	$1N_1$	AMA_a ⌜GI⌝	SAG+MA	ŠA $GEŠTU_{c5}$ $MUŠENx2N_{57}$ E_{2a}	SAG $ERIM_a$ TAK_{4a} NI_a $MUŠ_{3a}$ UR_2 DUR_2	
obv. Col. ii. 1a.	[…]	[…] KUR_a	[…]	⌜$PIRIG_{b1}$⌝ ERIMa	KA_2xLAM GA_a	
obv. Col. ii. 2a.	$1N_2$	$SAL.KUR_a$	-	E_{2a} EN_a TI	SI MA EN_a $GIxKU_{b1}$	
obv. Col. ii. 3a.	$1N_2$	$SAL.KUR_a$	-	E_{2a} EN_a TI	TUM_c KU_{6a}	GA_{a2}x$ŠE_3$ $ZATU\ 751_a$
obv. Col. ii. 4a.	$1N_2$	$SAL.KUR_a$	-	E_{2a} EN_a TI	$ŠE_a$+$ŠE_a$ $KAŠ_b$ DA_a	$3N_{57}$ A
obv. Col. ii. 5a.	$1N_1$	$SAL.KUR_a$	SAG+MA	DIM_a DA_a	$LAGAB_b$ ⌜DUxDIŠ⌝ $ERIM_a$	
rev. Col. i. 1a.	$2N_1$	$SAL.KUR_a$	SAG+MA	NI_a AL	[…] DU	
rev. Col. i. 2a.	$1N_1$	TUR SAL ⌜PAP_a⌝	[…]	NI_a AL […]	AN ⌜GAR⌝ $MUŠENx2N_{57}$ ŠA SAL	
rev. Col. i. 3a.	$1N_1$	KUR_a PAP_a	-	EN_a $ŠU_2$.E_{2a}	SAL ⌜AMA⌝ MUŠEN MAŠ ⌜$GIxKU_{b1}$⌝ KI	
rev. Col. i. 4a.	$1N_1$	$SAL.KUR_a$	-	EN_a $ŠU_2$.E_{2a}	GAL_a $ERIM_a$ PU_2	
rev. Col. i. 5a.	$1N_1$	$SAL.KUR_a$	-	EN_a $ŠU_2$.E_{2a}	SU_a U_{2b}	URU_{a1} SAR_a
rev. Col. i. 6a.	$1N_1$	KUR_a	SAG+MA	E_{2c} $ZATU735_a$	E_{2a} SAL AD_c	
rev. Col. ii. 1a.	$1N_1$	$SAL.KUR_a$	[…]	UD_{5a} […]	⌜GA_{2a2}x$ŠE_3$⌝ DUR_2 $ZATU\ 751_a$ $ERIM_a$	
rev. Col. ii. 2a.	[…]	[…]	[…]		⌜I⌝ GI_6 $ERIM_a$	
rev. Col. ii. 3a.	$1N_1$	⌜PAP_a⌝ […]			SAG+MA	
rev. Col. ii. 4a.	$1N_1$	SAL […]		NI_a […]	[…]	
rev. Col. ii. 5a.	$1N_1$	$SAL.KUR_a$	(see subcase 1?)	E_{2a} $ŠUR_{2a}$ ŠU RU DU	SAGxMA $ERIM_a$ GA_{2a2}x$ŠE_3$ RU	
rev. Col. ii. 6a.	$1N_1$	$SAL.KUR_a$	SAG+MA	TU_b TAK_{4a} A	E_{2a} U_4 LAM_b	⌜AD_c⌝ NI_a ŠU
rev. Col. ii. 7a.	⌜$1N_2$⌝	$SAL.KUR_a$	-	MAH_a x NA_a	TUM_c ŠA ŠA $SAL.KUR_a$	
rev. Col. ii. 7b.	$2N_1$	TUR	MEN_a $NUNUZ_{a1}$	E_{2a} DAH		

Figure 7.5 Names and categorization of SAG x MA and $ERIM_a$ in MSVO 1, 213. Only three of the individuals are clearly marked as KUR_a men, one or two are ungendered children (TUR), and the remainder are women of either SAL or $SAL.KUR_a$ identity.

Women in the Jemdet Nasr SAG x MA accounts

The Jemdet Nasr evidence for female slaves is somewhat different from the Uruk evidence. The three related plus one similar account (fig. 5.12 for all four texts), may record slaves originating as captives if the sign SAG x MA (head + rope) can be literally interpreted. One of these texts, MSVO 1, 214 records only females, and includes the categories SAL.KUR$_a$, (SAL.KUR$_a$?) TUR, and SAL (fig. 7.6). The apparent differentiation between the SAL.KUR$_a$ and SAL cases suggests that some females other than those of KUR$_a$ identity were included in the group of counted captives.

	main case			subcase 1	subcase 2
	count	*sex/age/status*	*additional designation*		
1	1N$_2$	SAL.KUR$_a$	MEN$_a$ NUNUZ$_{a1}$	SAG TAK$_{4a}$ NI$_a$	KU$_{6a}$ KISIM$_a$ KU$_{b1}$
2	2N$_2$	SAL.KUR$_a$ TUR	MEN$_a$ NUNUZ$_{a1}$	MUŠEN 6N$_{57}$? KAŠ$_c$	E$_{2a}$ DAH
3	1N$_2$	SAL	EN$_a$ A SILA$_{3a}$ x ŠU$_2$	KU$_{6a}$ ERIM$_a$	E$_{2a}$ DAH
		or SAL EN$_a$	A SILA$_{3a}$ x ŠU$_2$		
4	1N$_2$	SAL	EN$_a$ A SILA$_{3a}$ x ŠU$_2$	MUŠEN MAŠ	GI x KU$_{b1}$
		or SAL EN$_a$	A SILA$_{3a}$ x ŠU$_2$		

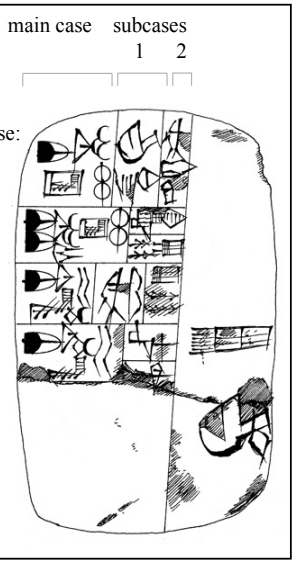


Figure 7.6: Captive (SAG x MA) women in MSVO 1, 214. The meanings of the series of subcases describing each SAL.KUR$_a$ or SAL individual are not understood, and since there are two per one individual for cases 1, 3, and 4, they appear not to represent only personal names of the slaves.

A number of problems arise in interpreting the naming cases, numerals, and gender designations in this and the related texts. It is difficult to disentangle the different pieces of information in the main cases of the text —in cases 3 and 4, the counted 'woman' may be classified primarily as SAL or as SAL EN$_a$ (see comments on W 9579,l pages 263 and 316). There is also sometimes an apparent mismatch between the number of individuals

indicated and the number of naming 'subcases'. The first case could include one (written $1N_2$) SAL.KUR_a with two different 'naming' subcases; but by hypothesis the naming subcases are supposed to correspond to the number of individuals, as in Uruk text W 23999,1. Could this text somehow include two SAL.KUR_a with only the sign $1N_2$? The second case may include one SAL.KUR_a (female) and one associated TUR (child), or alternately two SAL.KUR_a TUR (female KUR_a-children). These are just some of the complications in understanding the accounts.

SAL.KUR_a as 'mixed males and females'?

In proto-cuneiform the combination SAL.KUR_a is often known from text summaries, but also sometimes appears in the body of the text, as the Jemdet Nasr instances discussed above show. It appears that sometimes SAL.KUR_a acts as a summary of females and males (W 23999,1 fig. 7.8a), while in other cases it may refer to a single individual, as shown in MSVO 1, 214, fig. 7.8b; the tablet format and content dictate which of these meanings is to be understood. It is maintained in this dissertation (adapted from Vaiman's 1989 proposal) that when slaves are counted, the sign KUR_a alone represents *implicitly* male and *explicitly* of 'KUR_a' —namely, slave or perhaps 'foreign'— in status. When SAL is used alone in texts that are summarized as SAL.KUR_a (or in texts where SAL is paralleled with KUR_a in the text body) the sign SAL normally represents a short-hand for 'female' (implied: of the KUR_a class).

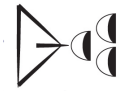
Standard (28x's)	Variant A (2x's)	Variant B (1x)	Variant C (1x)	Variant D (1x)
				

Figure 7.7: The combination SAL.KUR$_a$ appears in different arrangements, and it is unclear if rare variants should be understood to have the same meaning as the 'standard' combination. Sign placement in proto-cuneiform is almost entirely unexplored.

The sign combination SAL.KUR$_a$ appears in only three Uruk IV texts. Text W 9656,ef (fig. 7.3) clearly represents a summary of SAL and KUR$_a$ = 'mixed females and males', as is apparent from the count of separate SAL and KUR$_a$ in the text body. This is the most complex Uruk IV labour account using the KUR$_a$ sign. Another text (W 9827 figure 5.9 b) is only partially preserved, but appears to record over 211 SAL.KUR$_a$ (written: 3N$_{34}$ 3N$_{14}$ 1N$_1$… SAL.KUR$_a$). Most of the text is missing, and the broken portion contains remnants that suggest this count might have been divided between unnamed groups of SAL and KUR$_a$, though this is uncertain. The final use of SAL.KUR$_a$ in Uruk IV texts (W 9655,t figure 8.9a) is less clear. The text might contrast 3 adult and 2 young[164] counted 'SAL.KUR$_a$'(?) with one counted KUR$_a$. Because there is limited evidence for discussing the use of SAL.KUR$_a$ in the Uruk IV period, it is not possible to say, as did Vaiman, that there was a shift between an exclusive Uruk IV meaning of 'mixed male and female' to an Uruk III meaning of 'geme$_2$ = female slave'.

[164] see Vaiman 1989: 127, Englund 1998:158 for reading the numeral N$_8$ as 'immature human or animal'.

In fact, contrary to Vaiman's proposal, in a few Uruk III texts there can be no doubt that SAL.KUR$_a$ represents mixed males and females (e.g. fig. 7.8a below)[165]. However, the sign combination is also used in other texts in which the meaning is unclear and may represent a single individual (MSVO 1, 212–214; MS 2727); these examples all come from Jemdet Nasr or are of unknown origin. Some ambiguity can be found in the Uruk record as well: the unusual fragment that preserves counts of women (SAL) from different cities (W 24004, 3b, pages 267 and 308), is summarized with SAL.KUR$_a$ ŠU AB —the remainder of the text is missing and it therefore unclear if SAL.KUR$_a$ refers to women only.

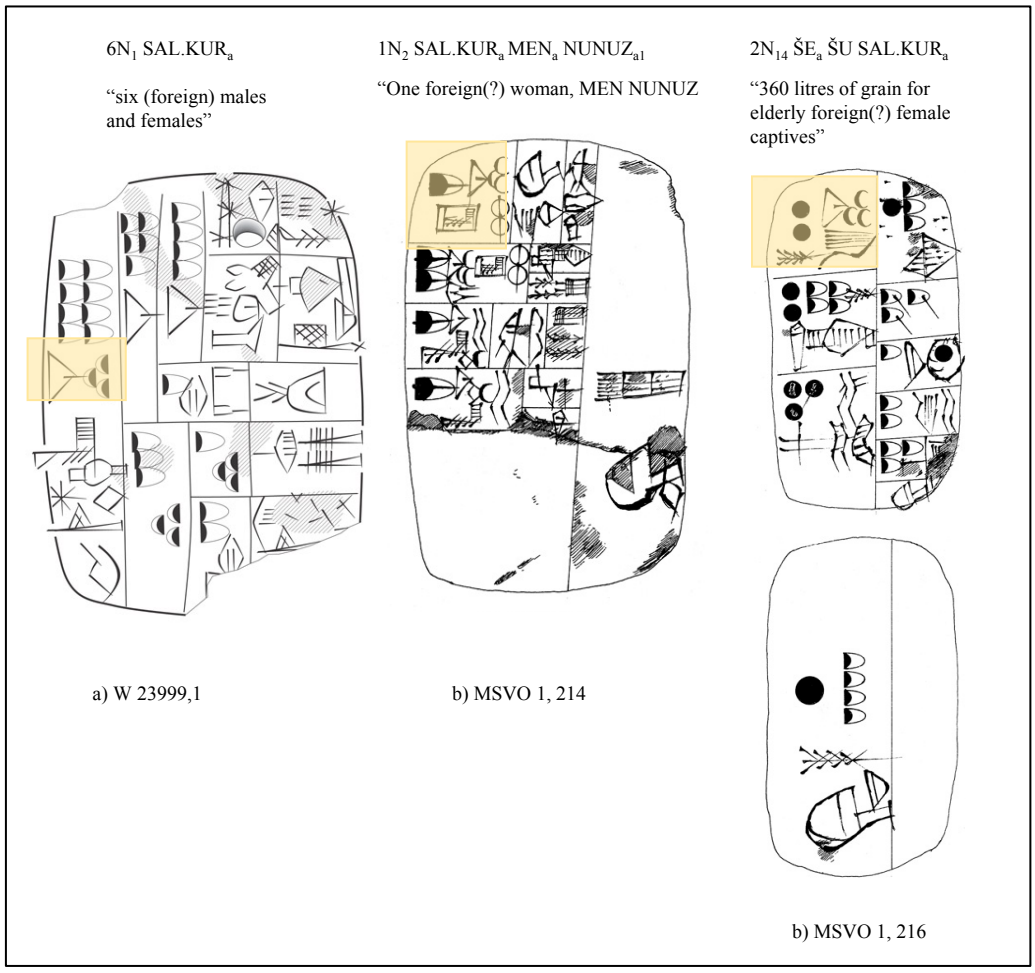


Figure 7.8: Uruk III texts with SAL.KUR$_a$ a) SAL.KUR$_a$ as 'mixed males and females' b) SAL.KUR$_a$ as a single individual, as shown by the count of 1 N$_2$ c) ambiguous use of SAL.KUR$_a$

[165] This appears to be the case in Uruk III texts from Uruk: W 15776,a ; W 157770,y ; W 23999,1 ; W 22104,3 ; W 17729,bp+bx.

It would take further corpora of excavated texts to determine if the meaning of SAL.KUR$_a$ varied between sites due to cultural or linguistic differences. In contrast with Uruk texts, Jemdet Nasr texts have not provided examples of accounts in which SAL.KUR$_a$ can be proven to be divided into SAL and KUR$_a$, since many questions remain about the gender and class designations in MSVO 1, 212–214.

Uruk IV 'receipts': female slaves or high status women?

SAL is found in over fifty known Uruk IV period texts. Because of the number of short receipts (see also chapter 5a) over twice as many Uruk IV texts as Uruk III texts are identified above as *possibly* reflecting record of female slaves, workers or other lower-class personnel. This is significant, especially since there are three times as many Uruk III as Uruk IV texts overall. Yet the receipts are difficult to understand and to relate to the 'slave trade' accounts.

A complete list of the Uruk IV receipts from Uruk including SAL is presented in figure 7.9. It has been suggested elsewhere (Vaiman 1974) and is maintained here that some of the receipts might record female (SAL) and/or male (KUR$_a$) personnel, in a few cases categorized additionally as GURUŠ or ERIM. These receipts typically record one or a few individuals, assuming N$_1$ in these texts is interpreted in the sexagesimal system (alternately, it could represent a capacity measure, in which case most of these texts would record 1N$_1$, about one month's traditional 'ration' worth of grain).

Because of the terse nature of the texts, they remain difficult to interpret. Chapter 5a raised the possibility that they could be records of 'offerings' or 'gift-giving' traditions, such as the a-ru-a or the maš-da-ri-a of other third-millennium corpora. In light of the

clear Uruk III uses of SAL and KUR_a for equid and cattle designations, the Uruk IV reading of SAL and KUR_a in texts texts as signs representing humans must be treated with caution. Additionally, of these texts only W 20854 (fig. 5.5f) unambiguously counts SAL as an object in contrast to KUR_a (since they are the only two signs on the text), while in other texts SAL may be part of more complex designations. A larger number of receipts include SAL along with sign combinations that could be interpreted as designations of higher status women (for example, the names of women presenting offerings).

A few points emerge from the Uruk IV texts collected above. Firstly, none of the designations associated with SAL are identical, and therefore no common households or individuals associated with SAL humans emerge. Overall, the designations on these texts are not similar to the 'names' in the naming cases from 'herded human' accounts. In a few instances SAL appears along with a known official's title (NAM_2 DI; SUKKAL $UŠ_a$; $SANGA_a$ $KISAL_{a1}$). If SAL were sometimes to represent proto-cuneiform equivalent of later $geme_2$, one could speculate whether a Sumerian name similar to $geme_2$ dub-lal(a) (Limet 1969: 415) can be identified within W 9123,w (DUB_b SAL DI LAL_{2a}). In another instance, the SAL in W 9579,al should be part of the 'city' designation known from lexical and administrative texts, SAL GA_{2b} x DUB_b , here marked also with IB_a ('household'?).

Text	num.	Designations accompanying SAL	notes
W 20854	$2N_1$	SAL $1N_1$ KUR_a	*single-sided, two cases, contrasts with:*
W 9123,w	$1N_1$	DUB_b SAL DI LAL_{2a}	*single case, single-sided*
W 9169,al	$2N_1$ +	[...] SAL ERIN $UNUG_a$ = 'woman of Susa'?	*single case, single-sided*
W 9355,b	$2N_1$	MAŠ SAL NAM_2 DI	*single case, single-sided* *separated from* GURUŠDA $UNUG_a$
W 9579,o	$1N_1$	SAL $SANGA_a$ $KISAL_{a1}$	*two cases, single-sided* *sub-category of* $UNUG_a$ *paralled with* $1N_1$ DUB_b KUR_a
W 9579,aa	$1N_1$	NA_{2b1} SAL BA DUB_b	*double-sided, single case per side* *paralleled on reverse with*: $1N_1$ $SANGA_a$ ⌜ZATU 754⌝ KUR_a ZATU 752
W 9579,ac	$1N_1$	SAL SUKKAL ⌜$UŠ_a$⌝	*two cases, single-sided* *subcategory of* $UNUG_a$ *paralleled with* $3N_1$ KUR_a $MAGUR_a$
W 9579,al	$1N_1$	*obverse:* $ŠE_a$ MAR_b BA NAM_a SAL *Reverse:*	*double-sided, single case per side*
	$1N_1$	IB_a SAL GA_{2b} x DUB_b $UMBIN_a$ SUHUR	
W 9579,bw	$1N_1$ $3N_{7a}$ $1N_9$ $1N_{12}$	SAG AB_2 AB_2 SAL $MUŠ_{3a}$	*double-sided, single case per side* *Reverse numerical notation only:* *counted in EN system:* $1N_{7a}$ $1N_{11}$
W 9579,by1	$1N_1$	SAL […] ŠUBUR GA_{2a1} x $1N_{57}$ DUB_b EN_b	*single case, single-sided*
W 9579,cb	$1N_2$	URU_a x NIMGIR $BARA_{2b}$ SAL $ERIM_a$	*single case, single-sided*
W 9579,ck	$1N_1$	$LAGAB_a$ RAD_{ag} GI PA_a SAL	*single case, single-sided*
W 9579,dg	$1N_1$	ZATU629 $ERIM_a$ SAL DUB_b $MUŠ_{3a}$	*single case, single-sided*
W 9579,dx	$1N_1$	$SANGA_a$ DUB_b $NAGA_b$ SAL $UNUG_a$ $MUŠ_{3a}$ [...]	*single case, single-sided*
W 9655,s	$1N_1$	SAL SU_a	*double-sided, double-case on obverse,* *single case on reverse* *subcategory of?* RAD_b *paralled on obverse by* $1N_1$ KUR_a $URUDU_a$ $ERIM_a$ *Reverse:* $1N_1$ URU_{a2} BA EN_b $MAGUR_a$
W 19410,5 (?)	$2N_{14}$ $2N_1$	SAL $ZATU694_d$ [...]	*double-sided, single case(?) on each side*. Reverse mostly destroyed: $1N_{14}$ [...] $1N_1$
W 20044,51 (?)	$1N_{51}$	SAL EN_a [...] MU	*single case, single-sided* *Bisexagesimal system?*

Figure 7.9: A complete list of Uruk IV receipts from Uruk including SAL

Therefore, a possible (loose) parallel for at least some of these texts are the maš-da-ri-a tablets from Pre-Sargonic Lagash, which often record gifts ('deliveries') to the e_2-^{d}ba-U_2 or the palace from the wives of important officials (Prentice 2010: 187 ff. and 153 ff. for other types of gift-giving in that corpus). However, the items being 'counted', and even the numerical system in which they are counted, remains unclear. If W 20044,51is of the

same accounting context, it raises doubts about the numerical system represented in these texts since it apparently uses a sign (N_{24}) belonging to the capacity systems but not the sexagesimal system. The social and economic context of these receipts has been lost and any interpretation remains tentative.

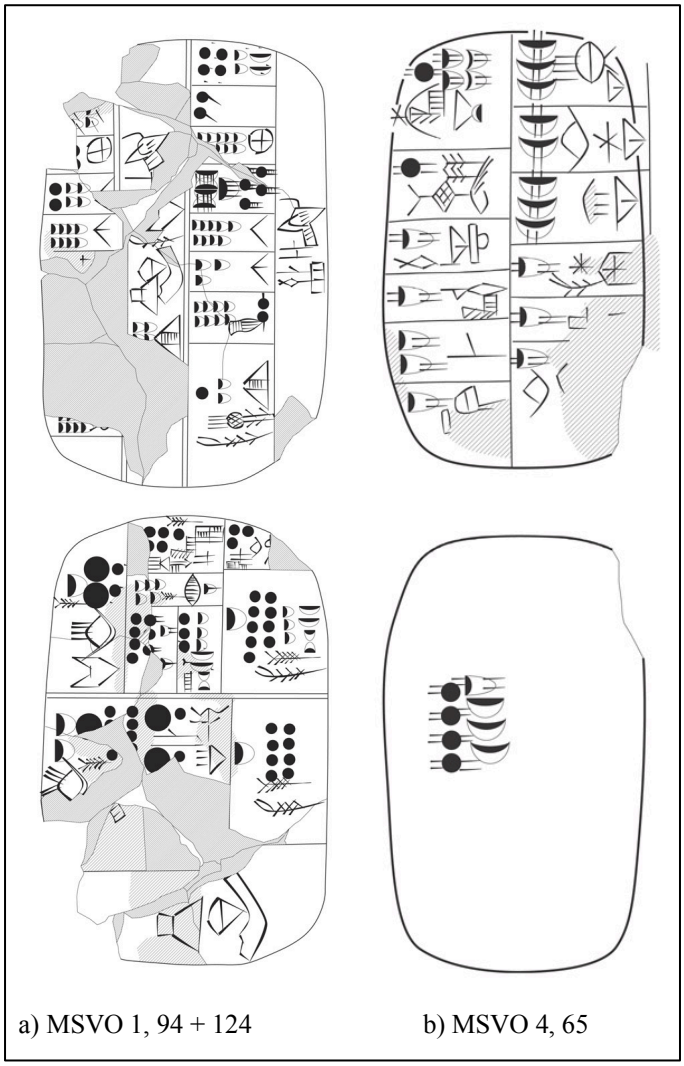
Grain distribution texts with SAL

Grain distribution texts in proto-cuneiform are distinct from the slave trade texts and others discussed above that most clearly contrast SAL and KUR_a. Some proto-cuneiform texts with the label GU_7 may record distributions to personnel, and a number of these include ambiguous uses of the sign SAL that may in some cases refer to lower-class female personnel. For example, text MSVO 3, 75 (possibly from Uruk) records emmer[166] distributions, including a case consisting of only the designation SAL and a capacity measure of grain. An Uruk fragment W 15775,k may count SAL and include calculation of man-day costs in grain (ZATU 659), but the majority of this text is missing. In a short Uruk text W 20274,57 with GU_7 in the colophon, a tentative interpretation of the combination U_4 x $1N_{57}$ SAL GURUŠ is 'one year, female workers' —this may relate to grain distributions to female workers, however this text as a whole is not understood. Texts that might record grain distributions in combination with 'named' individuals including the sign SAL are: W 2656,a ; W 20274, 24; CUSAS 1, 82; CUSAS 1, 105 and especially MSVO 4, 65.

The evidence for a difference in men's and women's rations in proto-cuneiform is very slim—namely, the observation by Friberg (1999:13) that in text MSVO 4, 65 (fig. 7.10b),

[166] As indicated by the use of the derived capacity measure system Š' (Englund 1998: 118).

the ‘names’ or designations of three of the ‘workers’ in the second line of the text include the sign SAL, and that these individuals are associated with amounts of emmer roughly one half to one third the size of the emmer distributions for individuals in the first column of the text. However, one of the individuals in the first column also includes the sign SAL in the personal designation, BU SAL ZATU 751$_b$. ‘Names’ including SAL ZATU 751$_b$ are known in a handful of other texts (see page 293).



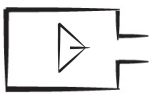
a) MSVO 1, 94 + 124 b) MSVO 4, 65

Figure 7.10 Accounts including capacity measures of grain and including SAL in designations with uncertain meanings

In MSVO 1, 94 + 124 (fig. 7.10a) the grain notation associated with 3N$_{57}$.SAL (=SAL.KUR, see page 186–7) is equivalent to 1,980 N$_{30a}$, which would equal five-and-a-

half year's grain for a single individual at the common $1N_1$ / month rate—it may not be coincidence then that the account records the broken time notation $U_4 + 5N_{57}$ (+ x N_{57}?), or '5 + x years'. The implication is that this text calculates grain expenditure for a single individual of the designation $3N_{57}$.SAL for a time period of 5 or more years. While these types of correspondences between time, capacity measure, and number of workers are a possible path towards further decipherment, many questions—such as the social and economic context for an account calculating a single individual's grain consumption—remain unanswered. On the one hand these calculations are consonant with human 'rations' known from text MSVO 4, 27 (fig. 5.14); on the other, the use of ŠE *and* GI in the summary counts on the reverse might indicate animal fodder, which could include both grain (ŠE) and reeds (GI).

'Households' with SAL in the designation

ZATU 737 x SAL 

ZATU 737 x SAL (Green and Nissen ZATU 743), appearing in 29 administrative texts, is interpreted by Charvát as a 'textile workshop'. It is used consistently in administrative texts involving textiles, although its role in those texts is not clear. Wagensonner (2015: 15) considers ZATU 737 to be a 'container sign' along with GA_{2a1}, DUG_c, and ZATU 759, all of which can 'frame' other signs. The sign is similar in form to the proto-Elamite series of sign forms M157 (fig. 7.11), although a direct relationship between ZATU 737 and M157 has not been demonstrated. M157 is by hypothesis a 'household' sign, and is used as a frame within which other signs can be inscribed; around 20 different such 'complex graphemes' using M157 have been identified. Similarly, ZATU 737 can be

inscribed with other signs; however, despite their graphical similarity, a functional comparison between the proto-cuneiform and proto-Elamite signs is difficult to prove. The very common proto-Elamite sign M157 is frequently used as the first entry in a text as a 'header', which may suggest it represents a household or other administrative unit associated with particular goods or personnel. Similarly, ZATU 737 x […] is sometimes used in the colophons of proto-cuneiform texts (e.g. ZATU 737 x SAL in Uruk text W 21671), but it is also often used in the body of the text.

ZATU 737 x SAL is used in the lexical *Archaic LU$_2$*, among other combinations involving ZATU 737 between entries 40 and 44 (composite[167]):

40. GAL$_a$ ZATU 737 x DI
41. SANGA$_a$ ZATU 737 x DI
42. SANGA$_a$ ZATU 737 x U$_4$ (?)
43. SANGA$_a$ ZATU 737 x SAL
44. SANGA$_a$ ZATU 737 xGAR

Since the sign went out of use after the Jemdet Nasr period, it is difficult to assess the meaning of both ZATU 737 and its combination with SAL. We can suggest that if it represents a household or administrative unit, the lexical evidence above suggests this unit was headed by a SANGA$_a$. The administrative documents also sometimes refer to the SANGA$_a$ of ZATU 737 'households/units'; for example an Uruk fragment (W 20044,19) may record bread and ale for the SANGA$_a$ of ZATU 737 x SAL. The parallel ZATU 737 combinations in the lexical list above (with DI, U$_4$ and GAR) are not all easy to interpret as households or administrative units, but we note that most of these combinations appear in administrative texts as well (for example ZATU 737 x DI is found in 6 administrative texts).

[167] Noting Johnson's (2015: 174) caution about the variation among witnesses of this list.

ZATU 737 is consistently replaced with GA_2 x ME in the Early Dynastic lexical traditions (Lecompte 2013: 149; Wagensonner 2015:16; cf. Steinkeller 1995a: 702), and this replacement may strengthen the suggestion that ZATU 737 is a 'household' sign in proto-cuneiform[168]. A transition might be reflected in unprovenanced Uruk III text MS 4557 which includes an entry GA_{2a1} $3N_{57}$ ZATU 737. Here GA_{2a1} could be an explanatory writing for scribes already unfamiliar ZATU 737. The sign ZATU 737 might have elsewhere been used phonetically for /ga/ in proto-cuneiform, such as in the combination ZATU 737 x BUR (=GABURRA, ZATU 185) for the place name gaburra.

As noted above, Charvát (2014a: 81) described SAL in ZATU 737 x SAL as a textile workshop employing primarily women. In fact, the only account explicitly preserving the sex of workers related to this household (W 17729,bp + W 17729,bx) records *men* with the sign KUR_a and young male children, $ŠA_{\mathbf{3a1}}$ TUR (KUR_a)— as well as presumably recording women in the part of the text not preserved, since the summary designation is $SAL.KUR_a$. Judging by later cuneiform parallel, the presence of male children in textile production 'workshops' is expected; although male 'adults' are less commonly seen, Garcia-Ventura (2016) has highlighted the gender neutrality of the term uš-bar, and pointed out instances of male textiles workers in third millennium Mesopotamia.

[168] contra Bartash 2014: 15 who suggests that ZATU 737 is not likely to be a 'household' sign because it is not directly related to $E_{2a–b}$.

SAL GA$_{2b}$+DUB$_a$

The place name SAL GA$_{2b}$+DUB$_a$ is known in both the lexical *Cities* (composite 39) and in a few administrative texts (W 15770,y; W 20511,7). The name has not been

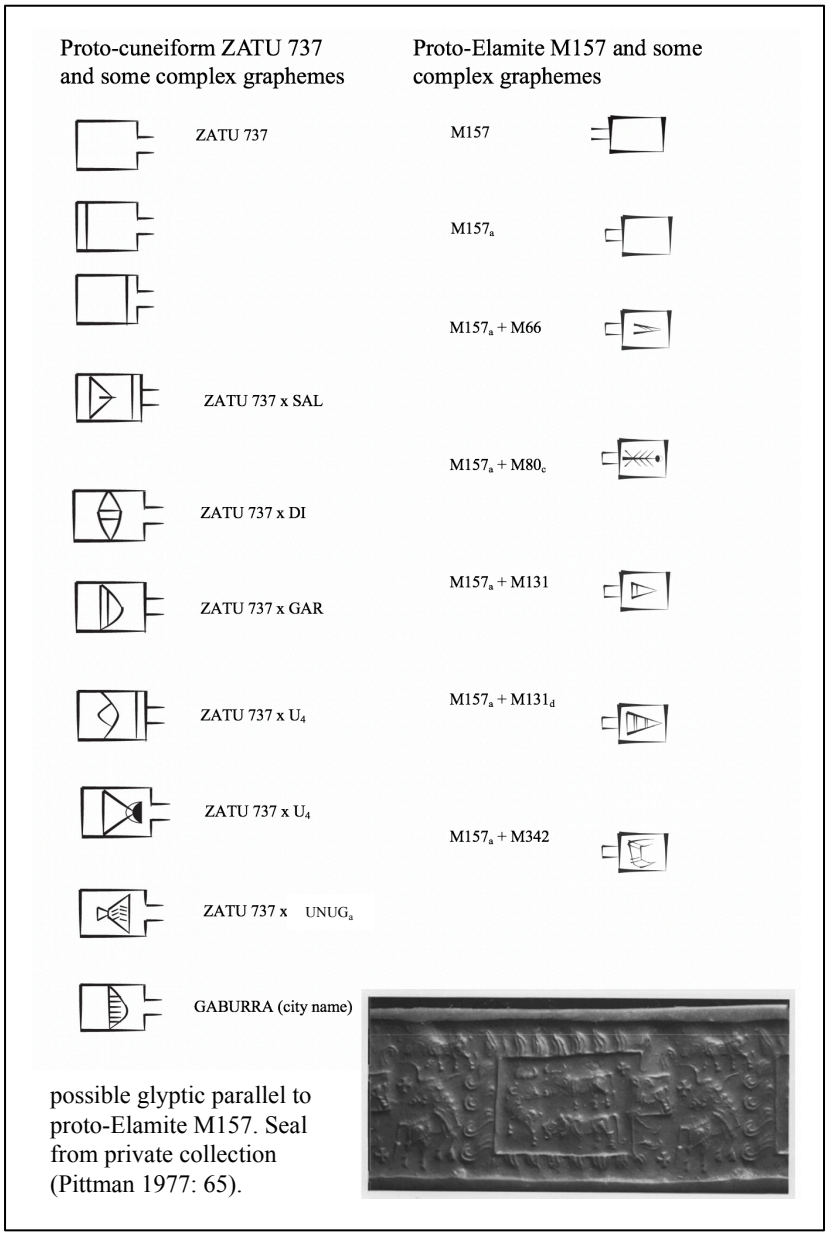
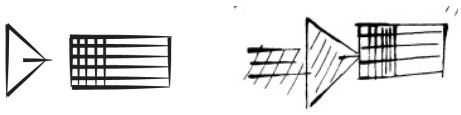


Figure 7.11: proto-cuneiform ZATU 737 and proto-Elamite M157 are similarly 'frame' signs that may represent households—however, a relationship between the two has not been proven.

Identified with an archaeological site. It follows the 'city' (E$_2$) NINLIL, which one could only speculate to relate to one of the cities known to be associated with that goddess

(such as Nippur or Šuruppak). One or possibly two fragments of archaic *Cities* preserve this entry[169]. One of these records SAL GA_{2b}+DUB_a URI_{3a} ⌜PAP_a⌝ and the other records […] PAP_a GA_{2b}+DUB_a NUN_a. The entry is replaced by SAL iri-dub-bu PAP in the Early Dynastic version from Fara (Deimel 1923 no. 23) and the only Old Babylonian copy doesn't preserve the entry.

As mentioned above, GA_2 is another 'container' sign that may depict a basket or box (Wagensonner 2015). The replacement of proto-cuneiform GA_2 with Early Dynastic iri again raises the possibility of the sign's status as a household or city organization, and also the possible relationship with later emesal GA_2, 'household' (although emesal isn't attested until much later, in the second millennium BC [Michalowski 2012]). The replacement of proto-cuneiform sign GA_2 with iri in the Early Dynastic version of *Cities* might reflect a situation in which 'household' and 'city' were fluid concepts in early urban centres (see also Michalowski 1993) and by which the representation in writing of various 'households' or organizations (page 20) was complicated by cultural and linguistic factors across different cuneiform corpora.

E_2 SAL and E_2 KUR_a/$3N_{57}$ SAL 

A combination E_{2a} SAL, with unclear meaning, may be found in a few texts and fragments (CUSAS 1, 168; MRAH O.4995), as well as appearing in cases with other signs, including E_{2a} SAL PAP (MSVO 1, 191); E_{2a} SAL AD_c and SAL E_{2a} TI EN_a (MSVO 1, 213 and 214); and SAL E_2 $3N_{57}$ $PIRIG_{b1}$ (W 15774,b). The spatial ordering of signs in this last combination should be compare to that of $3N_{57}$.$PIRIG_{b1}$ DU E_{2a} (W

[169] W 23998,1 and W 21208,17 + W 21208,20 + W 21208,21. A third, W 21208, 18 is illegible.

15772,z) with SAL replacing DU in the spatial organization (fig. 7.12). The combination $3N_{57}$ SAL E_2 in Uruk text W 24214,3 is comparable to the E_2 SAL KUR in CUSAS 1, 218[170], both possibly in reference to a household or administrative unit involving either female KUR_a personnel, or males and females of KUR_a identity. The Uruk text links this household to the NAMEŠDA and appears as the colophon for a large list of commodities, while the unprovenanced text (CUSAS 1, 218) lists E_2 SAL KUR in association with a count of ZATU 733_a (fig. 7.12), a sign visually similar to GU (flax) which could suggest a linen or oil production context.

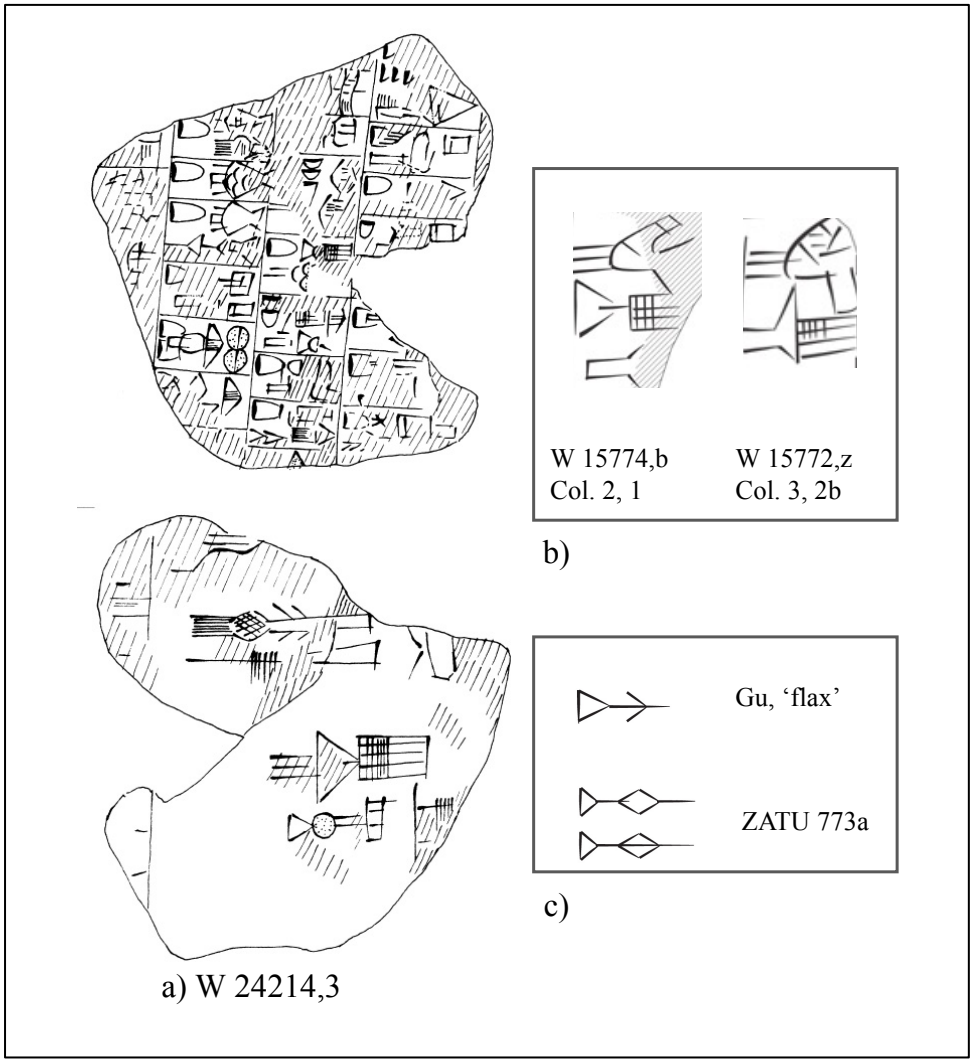


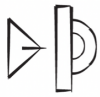
Figure 7.12: a) Text W 24214, 3 may be a complex account relating to SAL.KUR_x personnel of the ruler's (NAMEŠDA) household. B) E_2 SAL in a very similar designation to E_2 DU. These kinds of comparisons may aid future decipherment efforts c) ZATU 773a may be a variant of the sign GU ('flax').

[170] As collated by Monaco (2007). The KUR_a appears uncertain.

SAL ZATU 751$_{a-b}$

ZATU 751$_a$

ZATU 751$_b$



SAL ZATU 751$_a$

ZATU 751$_{a-b}$ is included in this section, although it is not clear whether the sign represents a 'household', administrative unit, or some other type of designation such as a product. ZATU 751$_{a-b}$ is not a very commonly used sign (fig. 7.13). While it appears in cases with a variety of signs, there is a noticeable correlation between ZATU 751 and a few signs: DUR$_2$, 3N$_{57}$, and SAL (and at Uruk, BU$_a$ + DU$_{6a}$). An unprovenanced text (CUSAS 1, 101) may record a SANGA$_a$ SAL ZATU 751$_a$, which could suggest that SAL ZATU 751$_a$ represented an administrative context like ZATU 737 above, that could be headed by a SANGA$_a$. Bartash understands the colophon in text W 20327,3 reading GU$_7$ GA$_a$.ZATU 753 to mean 'milk allocations', he interprets 3N$_{57}$ ZATU 751$_a$ E$_{2a}$ SAL as 'The 3rd (delivery) of the milk product ZATU 751$_a$ to the E$_2$-MUNUS' (2014: 14). A possible argument against interpreting 3N$_{57}$ here as 'third' is that, as shown in figure 7.13, ZATU 751$_a$ consistently appears with 3 (but never one or two) N$_{57}$ — and this includes a possible lexical entry.

Lexical	
LU_2:	GAL_a ZATU 751_a
AD-GI_4:	TAR_a ZATU 751_a
	DI ZATU 751_a
Unidentified:	HAL ZATU 751_a A
	$3N_{57}$ ZATU 751_b
Uruk	
W 14384	DUR_2 ZATU 751_a X
W 14731,b1	[...] BU_a + DU_{6a} AN ZATU 751_b UDU_a xTAR EN_a
W 20274, 13	DUR_2 $3N_{57}$ ZATU 751_a BU_a +DU_{6a} BAR?
W 20274, 39	ZATU 751_a [$3N_{57}$ DUR_2] BU_a + DU_{6a}
	U_4 X [ZATU 751_a]
W 20493, 15	BU_a X AB_2 AB_2 ZATU 751_a? SI
W 24184	[...] ZATU 751_a KA_2 x LAM URI_{3a} PAP_a ME_a
W 20327, 3	$3N_{57}$ E_{2a} ZATU 751_a SAL
W 20274, 22	TUG_{2a}.BAD x BAD $3N_{57}$ DUR_2 ZATU 751_a BU_a+DU_{6a}
MSVO 3, 75	SAL ZATU 751_a
Jemdet Nasr	
MSVO 1, 44	SAL ZATU 751_a
MSVO 1, 71	[ZATU 751_a]
MSVO 1, 212	ZATU 751_a $ERIM_a$
	MEN_a [DUR_2 ZATU 751_a] $ERIM_a$
MSVO 1, 213	ZATU 751_a [$ERIM_a$]
	DUR_2 $3N_{57}$ ZATU 751_a
	GA_{2a2} x $ŠE_3$ ZATU 751_a
	[GA_{2a2} x $ŠE_3$] DUR_2 ZATU 751_a $ERIM_c$
MSVO 1, 215	SAL ZATU 751_b UB [AB_a]
MSVO 1, 217	KIŠ
SAL ZATU 751_a	
	[SAL] ZATU 751_a NIM_{b1} KI
MSVO 1, 219	AB_a UB SAL ZATU 751_b
Uncertain	
CUSAS 1, 014	PAP_a ZATU 751_a
CUSAS 1, 080	[EN_a DUR_2 ZATU 751_a] ŠU [...]
CUSAS 1, 101	$SANGA_a$ SAL ZATU 751_a
CUSAS 1, 58	SAL SAL + ZATU 751_a GAL_a
MSVO 4, 58	ZATU 751_a EN_a
MSVO 4, 69	GA_a.ZATU753 ZATU 751_a

Figure 7.13: Complete list of uses of ZATU 751_{a-b} in proto-cuneiform texts.

Female craft workers and laborers in proto-cuneiform

Drawing on the later cuneiform records in which $geme_2$ and other women appear in roster and ration texts, often with reference to particular productive contexts such as textile work, it might be asked whether similar accounting traditions are already visible in the

Late Uruk and Jemdet Nasr period texts. The question is not so much whether women were undertaking particular craft activities already in the late fourth millennium (they surely were), but to what extent a scribal community was using their accounting technology to oversee production, and what information on the centralization and organization of the workforce can be extracted from the texts. A more difficult (and perhaps impossible to answer) set of questions relate to the scale of production, and — even more difficult to address—the social dynamics governing producers and consumers.

In addition to the later third millennium administrative texts, the schematic seals of the Late Uruk and Jemdet Nasr period have drawn attention to a possible cultural emphasis on groups of women working in textile production on a scale to be of significance for interregional trade already at the end of the fourth millennium. However, as outlined in chapter 3, the schematic seals themselves appear less closely related to the proto-cuneiform writing system, potentially limiting their relevance in helping to interpret the cultural context of the proto-cuneiform texts.

Archaic LU_2 is an important source for our knowledge of proto-cuneiform 'professionals'. With the exception of NINKUM and DAM, it does not list individuals explicitly labelled as female (SAL)— this may not be because the professions were assumed to be all masculine, but because gender was not a relevant factor in that lexical tradition (Zsolnay and Westenholz 2017). A major hurdle to proving readings of craft-workers in proto-cuneiform administrative texts is our poor understanding of the organizational contexts in which such individuals would appear. There are no straight-forward rosters or rationing texts listing different craft-workers, or at least none in which

the designations in entries can be consistently correlated to later cuneiform (Sumerian or Akkadian) writings.

Brewing

While in Sumerian literature, brewing may have been depicted as a woman's duty within the domestic sphere, a variety of professionals relating to brewing industries (professionals usually presumed to be male) are known from third millennium documents—although the gender of workers involved in these industries has not been explored. The appearance of a (perhaps mythical) female king (lugal) of Kish, Ku-Baba 'the ale-brewer'—that is, munus lu_2 KAŠ.DIN.NA ('woman of kurun-ale) — in the *Sumerian King List*, an early second millennium literary document, may retain memory of powerful women heading brewing establishments (if it is not to be understood entirely as a literary construct).

Archaic LU_2 does not seem to include any identifiable terms for brewers, but in the Early Dynastic List B from Fara (VAT 12617), a ŠIM SAR and $MUNU_3$ SAR appear as professionals related to ale production (Civil 1969: 13). In later Sumerian, a normal term for brewer is lu_2 ŠIM (ŠIM = $bappir_2$ or perhaps lunga) literally 'person (who does) $bappir_2$', and is distinguished sometimes from $munu_x$ mu_2, '[person who] "grows" malt' (Powell 1994: 99). The KU_{b1} $ŠIM_a$ accounts discussed on page 138 evidence proto-cuneiform administration of breweries as well.

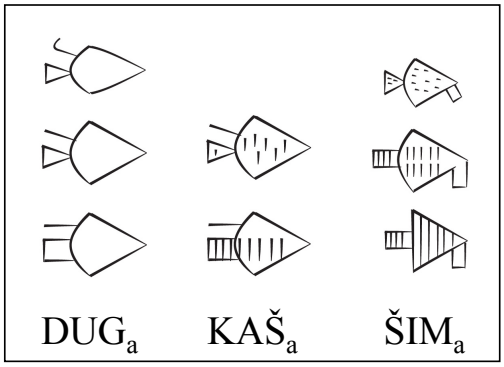


Figure 7.14: Proto-cuneiform signs for vessels of ale

Ale is a frequently-occurring commodity in the proto-cuneiform texts, known by at least nine different varieties (Damerow 2012). KAŠ is the most basic sign for ale, and DUG$_a$ also depicts a jar with a spout that may hold ale (Englund 1998: 181). A related product DIN was also attested in the proto-cuneiform texts. Proto-cuneiform signs for ale products, vessels, and tools do not have a straight-forward relationship with later signs (Damerow 2012: 6 traces some of the transformations), and the sign names are only conventional. The proto-cuneiform sign ŠIM may depict a vessel with a valve at the bottom, possibly used to drain ale into a storage vessel (Damerow 2012: 15).

Unprovenanced text MSVO 4, 67 (possibly from Larsa, Englund 1996: 14), was described as 'a consolidated account of female slaves(?), possibly assigned to the brewery represented by the sign ŠIM, and to be 'traded' (? ŠAM$_2$)' (Englund 1996: 27; similarly Charvát 2014b: 170). As the tentative translation suggestions, there is ambiguity in the text. What is clear is that it records 10 SAL, and that six of these were ŠIM (perhaps recalling the ŠIM SAR brewers from Fara) while four were ŠAM$_2$ (for sale? Or even 'merchants'?). The ten main cases on the obverse of the text, recorded with 1N$_1$ each, refer to the ten (wr. 1N$_{14}$) in the text summary on the reverse labelled SAL ŠAM$_2$ ŠIM. Unforunately, the incomprehensibility of the set of signs in the cases and subcases associated with each of these SAL (compared by Englund to the subcase formatting in SAG x MA account MSVO 1, 212) show how much work remains in the decipherment of proto-cuneiform. They are difficult to understand as personal names.

For example, entries 4–6 obv. Are:

4a. $1N_1$ LU_2 PAP_a
4b1. $SANGA_a$
4b2. SI_{4f}
5a. $1N_1$ MAR_a PAP_a SAL
5b1. GURUŠDA
5b. $SILA_{3a}$ x $ŠU_2$
6a. $1N_1$ DA_a MUŠEN x $2N_{57}$
6b1. $BAHAR_{2c}$
6b2. [KID_b]

The pattern appears to be:

A) 'One' + Personal Name
B) Title/occupation
C) Further unclear designation

The 'professions' referenced side-by-side in the selection above are a sanga-administrator, a cattle-fattener, and a potter. The text summary might be read to suggest that the counted SAL(?) associated with each are involved in ale production. We probably need to understand the subcase B to reflect individuals associated with each SAL, as opposed to descriptions of the SAL themselves (would a cattle-fattener also be listed as a female brewer?). The further designations (C in the pattern outline above, the second 'subcases') are hard to understand and do not immediately appear to be plausible personal names of the aforementioned professionals or the SAL. For example, entry 5b uses a variant of $SILA_{3a}$. Englund (1998: 165) has suggested that $SILA_{3a}$ could be a depiction of the Blumentopf vessel, and Johnson (2015:192) has described the sign which is modified by the addition of a number of different signs, as a '$SILA_{3a}$ vessel of ale or dairy fats' and its administrative attestations as 'used to track the distribution of highly valued goods' in elite rationing contexts. It is not known if this sign was used syllabically or otherwise as part of personal names. In short, the social and administrative context of this text is far from clear, although the conclusion that it records female brewers (perhaps 'donated' to a brewery, following Englund above) appears likely. On the other hand, a feasible

alternative is that SAL acted as a qualifier for the type of ŠIM (for example, 'fine, thin'?), and four of these SAL ŠIM were 'for sale' ($ŠAM_2$). As is often the case in proto-cuneiform, it is difficult to devise ways to confirm one hypothesis over another.

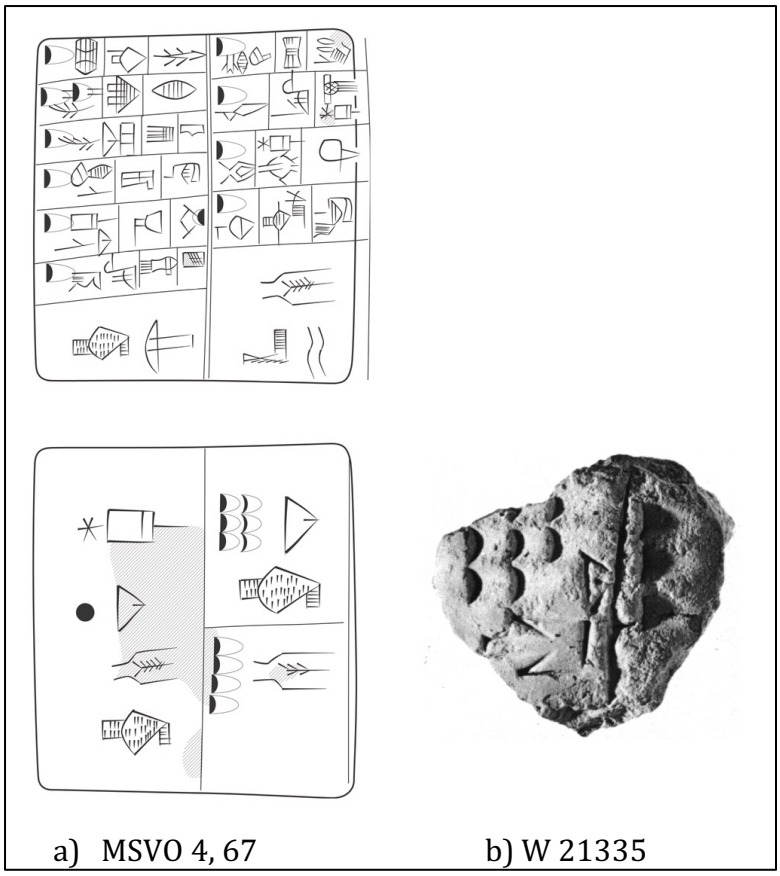


Figure 7.15: Possible textual references to female brewers (a) and grain-grinders (b).

Grain grinding

Maekawa noted that in the evidence from Ur III Lagash/Girsu, groups of milling women ($geme_2$-$kikken_x$ = HAR.HAR) were the next most commonly attested after groups of female weavers (1980b: 96)[171]. At the time of the third dynasty of Ur, the large 'grain grinding households' (e_2-HAR-HAR) at Girsu were divided up into different administrative units related to the storage and processing of grain, and even including

[171] An association between grinding and particularly female labour is also visible in New Kingdom Egyptian evidence (Lang 2016).

textile workers, livestock departments (presumably related by the use of grain products as animal feed), and various other workshops (Grégiore 1999).

While there are no obvious rosters of grain-grinders in the proto-cuneiform texts, the preponderance of capacity measure references to grain—probably distinguishing between barley, emmer and other grains and in varying states (malt and groats? [Nissen et al. 1993: 29]) and including texts calculating amounts of grain used in the production of breads and ales— make it clear that both the movement and processing of grain were fundamental concerns of the proto-cuneiform administrators. In addition, the large number of bevelled-rim bowls at urban sites of this period may reflect a situation in which large households were 'baking bread on an industrial scale' (Potts 2009: 13), or judging by the bowl's recovery often away from areas with hearths, for large-scale serving of products such as ale that did not require cooking (Pollock 2015: 37).

Yet direct references to millers and milling have so far been difficult to pinpoint. An Uruk IV fragment (W 21335) might record a team of eight females for grinding grain, indicated by SAL GUM; the sign GUM is a depiction of a mortar and pestle. Other uses of the sign in proto-cuneiform are varied. The combination ŠU GUM is recorded in conjunction with '598' counted breads or bread-rations (NINDA) in an Uruk III text from Uruk (W 22114). GUM is used a number of other times in association with ERIM, which could possibly reflect teams of grinders; but it never appears combined with SAL elsewhere, apart from one unprovenanced text (MS 2350) with the case ⌜GUM$_b$⌝ SAL.LAM$_b$ TUR.

In addition, a rare use of the sign combination SAL UR_5 in a single Uruk III text (W 17729,fg) could potentially refer to women employed in grinding or milling grain, and the fragment appears to include subcases to the count of three SAL UR_5 that could record personal names. Another common designation for females using the sign UR_5 is HAR-tu for female slave, which is sometimes translated as 'domestic servant' or 'chambermaid' (Renger 1975: 440). In addition, when UR_5 is used along with grain notations in proto-cuneiform texts it may often refer to an administrative procedure that Monaco (2012) proposes to understand, like later cuneiform, as a 'loan' of barley. The use of UR_5 in the case preceding GUM_b in unprovenanced text MS 2440 can be noted as evidence of the sign's possible relationship with grinding grain already in the proto-cuneiform texts.

Textile production

Charvát (2014a: 81) proposed understanding nine Uruk III texts (fig. 7.16) from Uruk as records of 'a number of specific textile materials transferred to the SAL…such women probably both produced, and received, textiles, sometimes as rations, sometimes not, occasionally on festive days'. Only W 24024, 1 offers enough evidence to suggest a link between the materials and tools for textile production and the 'workers' perhaps identified through the summary case with ZATU 759 SAG. On the other hand, it is also possible that SAG refers to the type or quality of a product here as is known from later cuneiform.

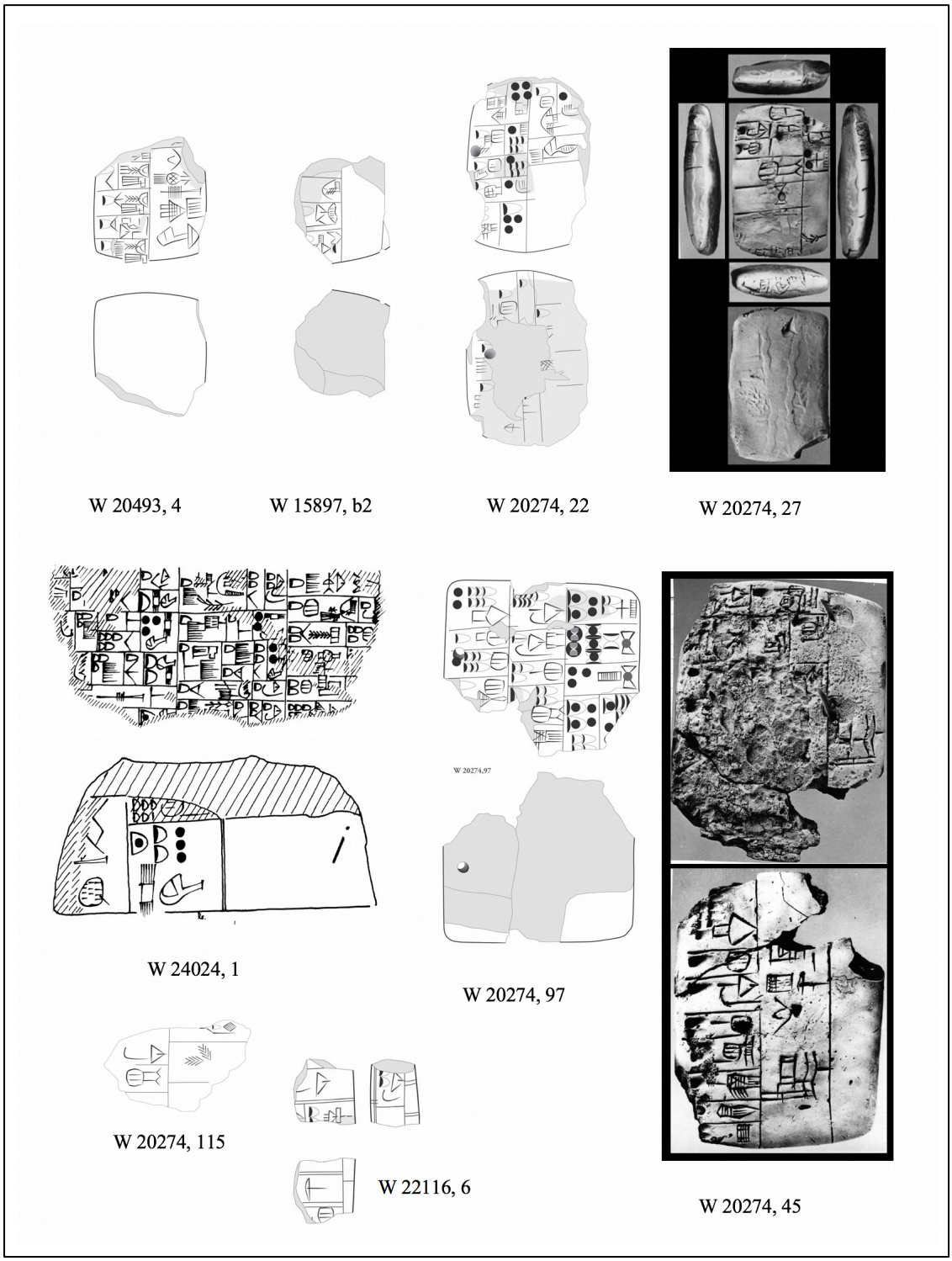


Figure 7.16: Texts proposed by Charvát (2014a) to record material deliveries to female textile workers.

It can still be asked —are male or female textile workers ever referenced in the proto-cuneiform documents? Female weavers in third millennium Mesopotamia could be known as ki-siki(-ka), and at least from the Sargonic period onwards as (geme$_2$) uš-bar

(Sum.) or *išpartu/ašpartu* (Akk.). These terms haven't been identified in proto-cuneiform. Twenty-seven proto-cuneiform texts include the designation $1N_{57}$ BAR SAL which clearly relates to wool or textiles. This combination can also be modified with the qualification 'small' (TUR) (e.g. W 20274, 97). Texts including $1N_{57}$ BAR SAL come from Uruk and from private collections, but are not known from the excavated Jemdet Nasr corpus. The contexts in which this combination is used include other known proto-cuneiform textile designations, confirming that its meaning in proto-cuneiform was related to textile production.

$1N_{57}$ BAR SAL may be connected to the writing BAR SAL known in later cuneiform as a textile designation. TUG_2 bar sal-la is known as a type of garment from the Old Akkadian period, and in Old Babylonian lexical tradition, UDU BAR SAL is known as a designation of sheep or sheep's wool. On the other hand, the proto-cuneiform designation consistently includes a single 'stroke' ($1N_{57}$) of unclear significance. This could also be read as the sign 'aš' (Sumerian for 'one')[172], or alternately $1N_{57}$ inside a numerical notation N_1 (which in fact does occur in W 20274, 97, 2ii, figure 7.16) is a proto-cuneiform sign that has been related to later $uš_2$ (Hakwins 2015). Both of these suggestions could result in the Sumerian reading $geme_2$ aš-bar / $geme_2$ $uš_x$-bar, or perhaps an abbreviated writing for an early Akkadian ^{f}aš-par(tu). Firth (2014: 71 and fn. 39) notes fifteen examples of a type of textile called $^{tug}_2$ nig_2-lam_2 uš-bar, especially present at Ur III Girsu, which he tentatively interprets as 'a $^{tug}_2$ nig_2-lam_2 for a weaver (uš-bar)', though expressing doubts at the interpretation that these were garments for weavers, because of the relatively low number of this type of textile listed in comparison to the number of weavers (cf. also Englund 1998:151 fn. 343 referring to tug_2 uš.bar as 'simple cloths').

[172] Sarzyńska 2002 read the combination as AŠ SAL BAR and understood it as a textile designation.

There is a possibility that the proto-cuneiform combination 1N$_{57}$ BAR SAL is related either to later TUG$_2$ bar sal-la or to $^{tug}_2$ nig$_2$-lam$_2$ uš-bar, although it may not be appropriate to look for a precise garment identification from later cuneiform sources. The use of 1N$_{57}$ BAR SAL in the proto-cuneiform texts is difficult to interpret, but appears more likely to be taken as a product than as a female textile worker. On the other hand, in CUSAS 31, 26 (fig. 7.17b) that Monaco has classified as a 'register of personnel', five cases of the category 1N$_{57}$ BAR SAL are counted seemingly along with personal names (possibly, distributions to these individuals). A similar text from Uruk, W 20274, 14 (fig. 7.17a) counts thirty-five of this product (or personnel cateogory?); this text shares with CUSAS 31, 26 the marking out of a sign combination Monaco reads as GIŠxŠU$_{2b}$ (2016: 52). It is noted also that the combination BAR:UŠ in the archaic lexical *Metal* may represent a metal tool related to textile production[173]. An interpretation of the combination 1N$_{57}$ BAR SAL as a product rather than textile workers means that no proto-cuneiform terms for textile workers have yet been identified.

Fieldwork

Explicit evidence for women engaged in fieldwork comes from only a few Jemdet Nasr texts. Despite the possible connection between AL as a designation for adult, and AL as a depiction of a hoe (Englund 2005: fn. 19), it is difficult to identify either women or men in texts referencing fieldwork with this sign. For example, MSVO 1, 32 may possibly

[173] see Maiocchi 2016: 93 with previous references, who however, only notes the presence of the combination as early as the Early Dynastic version of the lexical.

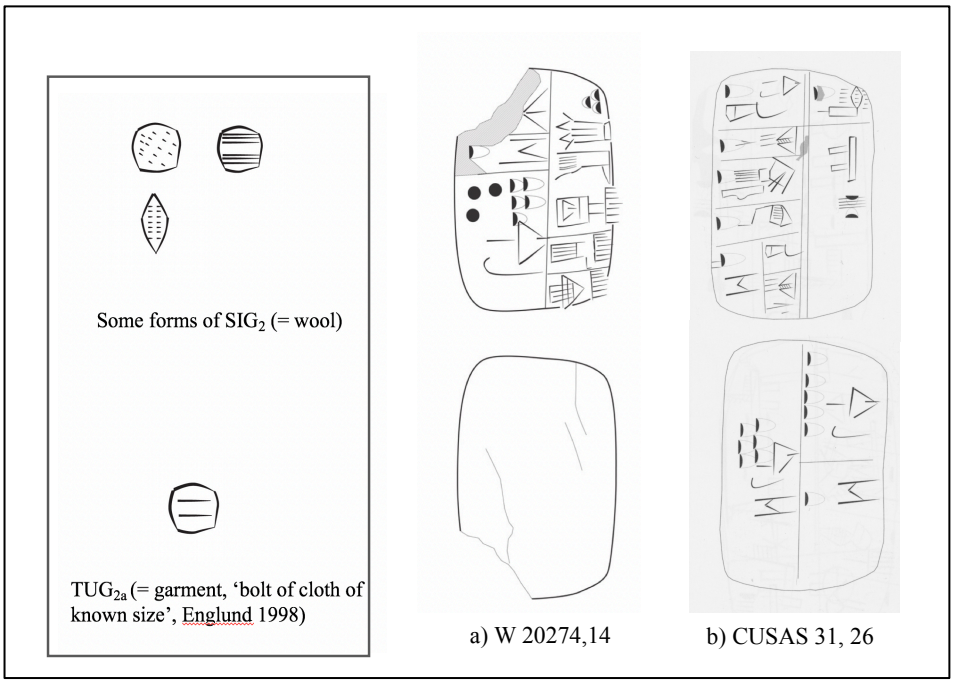


Figure 7.17: W 20274, 14 and CUSAS 31, 26 are examples of accounts including 1N57 SAL UŠ BAR with a numerical notation in an unclear numerical system. See also W 20274,97 figure 7.16.

record grain allocations for 'hoers', by one interpretation of the colophon ŠE$_a$ BA AL ⌜DU⌝ however, the workers themselves do not appear in the text. It would be interesting to know whether there are in fact large numbers of females recorded as agricultural workers, particularly in order to bring tangible evidence to Sherratt's (1981) theorization on the shift from primarily female 'hoers' to male 'plough-workers', and the associated suggestion that within early Near Eastern urbanism there is general movement of female labour out of the fields and into specialized domains such as textile production (McCorriston 1997).

SAL and GURUŠ personnel

In a few Uruk texts (W 9311,a; W 17879,ae ; W 20274, 57; W 21045,1), SAL.GURUŠ or SAL and GURUŠ are recorded. Steinkeller understood this proto-cuneiform sign, ZATU 247, as a ceremonial threshing sledge, but disagreed with Green and Nissen (1987) that

the reading GURUŠ should be applied to the sign. Regardless of the possible transliteration of the sign and links with later cuneiform terminology, the evidence from MSVO 1, 1 (fig. 5.1d) and other texts confirms a link between ZATU 247 and terms for agricultural personnel.

W 17879,ae is only a small fragment, but preserves a combination SAL.GURUŠ (with SAL written close on top of GURUŠ), and the text includes numerical notations for large area measures, thus linking (SAL)GURUŠ to agricultural work in Uruk. In W 9311,a SAL GURUŠ is used in a case before SIG_7, and then SAL ZAG_c , all of which might be interpreted as 'worker categories' and are followed by a case that qualify these as '(from?) Uruk ($UNUG_a$)'. The sign ZAG is a rare descriptor for GU_4, AMAR, and $ŠAH_2$ (cattle and pigs) in other texts, so its meaning here should be carefully considered. This text counts 22 humans or animals in the body of the text, as shown by the summary on the reverse.

Jemdet Nasr text MSVO 1, 1 (fig. 5.1d) links groups of SAL GURUŠ to plots of irrigated fields for growing barley, each plot belonging to a different official (GAL_a $ŠUB_a$, GIR_{3gb} PA_a, NAM_2 DI, EN SAL, and ME_a NI_a.RU), all of whose titles are known from both lexical and administrative texts. This text is closely associated with the 'field of the EN' text (MSVO 1, 2), since the same officials occur in the same order—with the exception only that ME_a NI_a.RU in MSVO 1,1 is paralleled by ME_a in MSVO 1,2, and that EN SAL and ME_a (NI_a.RU) are reversed in the ordering of the two accounts.

The designation SAL GURUŠ might sometimes be understood to reflect mixed groups of SAL and GURUŠ in a pattern of the same type as the designation $SAL.KUR_a$ for mixed

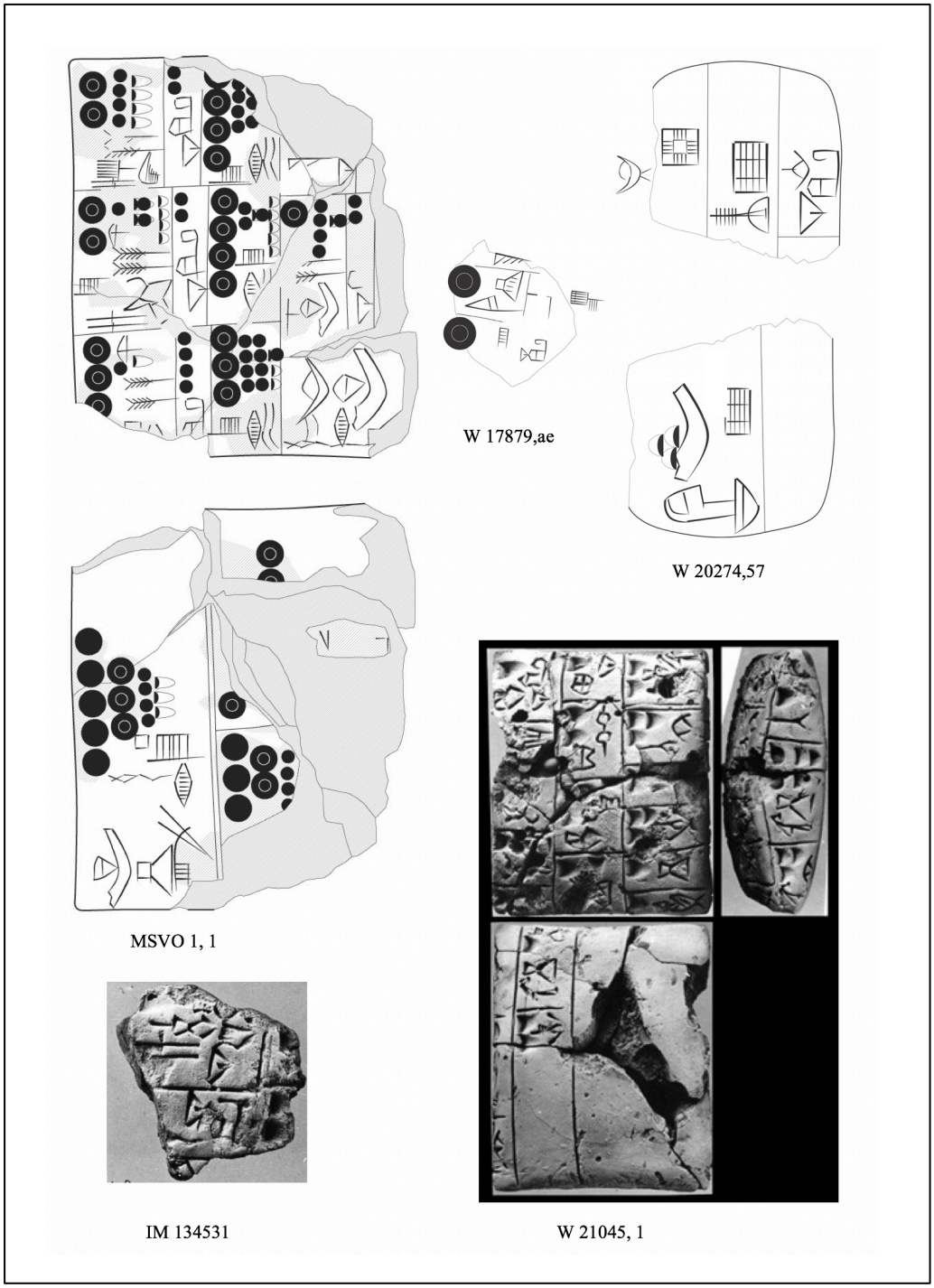


Figure 7.18: Texts recording GURUŠ and SAL

SAL and KUR_a. It may also be that the combination represents female GURUŠ, following the other demonstrable use of SAL.KUR_a in proto-cuneiform as females of KUR_a status. Following later uses of GURUŠ (if that is the sign's lexemic association),

these might be female workers. However, they may also be female-animal threshing sledge teams[174]; 'female GURUŠ-class workers' is not the only possible interpretation.

Inter-city personnel exchanges

One Uruk III fragment (W 24004, 3b) lists known place names (Uri_5 ; $Ararma_2$; $Arina_x$) along with small numbers of otherwise nameless SAL. Englund tentatively interprets this as 'a list of female slaves donated to Uruk cults by major Babylonian towns?' (1998: 30 fn. 41). In this text, $SAL.KUR_a$ is interpreted as 'female slaves' rather than 'mixed males and females' because no KUR_a appear (although the text is only fragmentary). The significance of the fragment is that it offers a look at the interconnectedness of some early Mesopotamian cities. In particular, it suggests that there was an exchange of female personnel between city institutions, and that this exchange was formalized and recorded by the scribes of Uruk. The $SAL(.KUR_a)$ in this text are not provided with personal names, but are only 'assigned' from or to a city. The fragment reads:

	Translation
obverse	
column 1	
1.a. $1N_1$ URI_5	Ur,
1.b. $4N_1$ SAL	four women;
2.a. $1N_1$ $ARARMA_{2a}$	Larsa,
2.b. $2N_1$ SAL	two women;
3.a. [...]	[…]
3.b. $2N_1$ [...] SAL	two (+ x?) women;
column 2	
1. $1N_1$ $BU_a \times BU_a.NA_{2a}$	$Arina_x$
2. $2N_1$ [...]	two (+ x?) [women]
reverse	
column 1	
1. $2N_{14}$ [...] , $SAL.KUR_a$ ŠU AB_a [...]	twenty (+ ?) female slaves, […] the city-institution (AB) […]

[174] Such work could be done by asses (Liverani 1998/2006:17), and we note the uses of SAL for adult equids known especially from the CUSAS 1 and 31 texts (Monaco 2007: 66–78 nos. 31–40, 2016: 68–81 nos. 41–56).

Uruk fragment W 18247,5 may also list a 'woman of Ur' (URI_5 SAL). The movement of women between cities, whether as emissaries or slaves is not surprising. Some possible third millennium parallels are a reference to dam e_3 uru-bar in the texts from Tell Beydar, which are understood as some sort of professional women who travel 'outside of' or 'to other cities' (Sallaberger 2014: 43); and a text from Ebla which records 'matrons' ($AB_2xAŠ_2.AB_2xAŠ_2$) and 'singers' SAL.NAR from $Kiš^{ki}$ who had travelled with a caravan from Mari to Ebla, where they received silver in the palace (Steinkeller 1993a: / *Eblaitica* 1, 139 no. 16). The different geographic locales mentioned in the proto-cuneiform texts referencing SAL (Ur; Larsa; Arina; Zabalam; Šuruppak; SAL GA_2xDUB; NIM_{b1}?) as well as the local references to SAL(.KUR_a) from Uruk, NI_a.RU and UB altogether highlight the interconnectedness of early Mesopotamian cities, and shows that female personnel were among those 'transferred' or travelling between these different centres.

Unprovenanced texts

Around a dozen unprovenanced texts use the sign SAL in situations that might reflect counts of women, or designations for female administrative units. Most of these texts do not provide information significantly different from what is observed in the Uruk and Jemdet Nasr texts, but a few require comment.

MS 4494 is a broken text with unusual features. The impressions of the numerical notation N_1 on the obverse are at an unusual angle. The format on the reverse is unique. The colophon on the obverse, as preserved, reads […] SAL $KIŠ_x$ ŠURRUPAK

('…female equids of Šurrupak'?). The reverse seems to count 'teams' of unnamed $ERIM_a$ divided into groups of SAL and KUR_a, and could strengthen the possibility that other SAL or KUR_a in contexts with the designation $ERIM_a$ in proto-cuneiform could be interpreted as donkey teams. The authenticity of the text is difficult to judge, and like others in private collections, information from this text is best not relied upon at this stage in the decipherment of proto-cuneiform.

Potentially most important to understanding SAL as possible counted female workers in proto-cuneiform is text MS 2437 (fig. 7.19), which provides an exceptionally well preserved longer list of small groups of unnamed SAL, appearing in subcases attached to 62 different main cases. In each main case, a complex designation (a personal name?) is recorded along with a numerical notation ranging between 1 and 7 N_1. The summary, $1N_{34}$ 2 N1 is marked as SAG.

In total, 281 unnamed SAL are included in the text, assuming the *sexagesimal* system for the subcases with SAL. These SAL are counted in groups of between 2 and 13, in subcases to the sixty-two different main cases (A few of the sixty-two cases do not include subcases with SAL). There is no apparent numerical relationship between the numerical notation in the main cases and the number of SAL in the subcases, and it is therefore difficult to understand this text as a 'rationing' text. In short, the text provides serious challenges of interpretation. While the sign-forms are mostly consistent with proto-cuneiform corpus more broadly, a provenance for the text is sorely missing, since judging its authenticity would be crucial before building a more complex analysis and before drawing further conclusions on records of female personnel in proto-cuneiform.

The account could potentially be the most well-preserved complex account of female personnel.

Figure 7.19: MS 2437, an unusual account including repeated groups of nameless SAL.

Lexical evidence

Entries including the sign SAL are known from lexical texts, both known compositions and non-standard ones (proto-cuneiform lexical traditions that cannot be matched with later cuneiform tradition). Lecompte (2016) notes that only two titles from archaic LU_2 may explicitly refer to females through sign combinations incorporating SAL—these are DAM (LU_2 52) and NINKUM (LU_2 68).

In the lexical or literary composition AD-GI_4, one entry includes SAL: entry 73 (following Civil 2013), reads SAL.IŠ (=GIBIL), and Fara and Abu Salabikh versions modify this to DAM:URU x IŠ, for which Civil (2013: 44–5) suggests a reading 'the expert town woman' munus uru zu_x (IŠ). Civil interprets this entry as a description of the woman referred to by a personal name in entry 72, EN:$EŠ_2$:ZI – which he understands as the female counterpart to a possible male name in the preceding entry 71, EN.$EŠ_2$ (the later version convinced Civil this is a reference to Enmerkar). The Early Dynastic versions also contain an entry 92 reading simpy SAL (not preserved in archaic AD-GI_4). Civil takes the most likely meaning of this to be 'female servant' (he cites Akk. *Amtu*), with the following case UR UR possibly meaning 'and all workmen', reading Sumerian /ur/ as the term for 'servant' parallel to Akkadian *(w)ardum* (Civil 2013: 49; Krecher 1987). In this context, we compared the unidentified lexical fragment ATU 7, HD 9 (P000709) which may possibly fill this gap in archaic AD-GI_4:

2'. $1N_1$ SAL SAL
3'. $1N_1$ UR_a UR_a

Another proto-cuneiform lexical text including SAL is *Vocabulary*, which uses SAL as a category contrasting with four others: PAP_a, GI, and AN. The significance of the sign

UR_3 in proto-cuneiform administrative contexts (later Sumerian ‘plank of wood’; ‘roof’; ‘to drag’) is not known. The section is preserved in text VAT 16912[175]:

Column 3
4. $1N_1$ PAP_a UR_{3b2}
5. $1N_1$ SAL UR_{3b2}
6. $1N_1$ GI UR_{3b2}
7. $1N_1$ AN UR_{3b2}

It might be asked whether parallel can be found in proto-Elamite text MDP 17, 112 (fig. 5.28e), which counts categories of ‘workers’ including M72 (graphically equivalent to SAL), $M3_b$ (graphically equivalent to PAP_a), and M46 (graphically equivalent to AN). SAL also occasionally contrasts with PAP_a in administrative texts such as Uruk IV text W 6710,a (page 263).

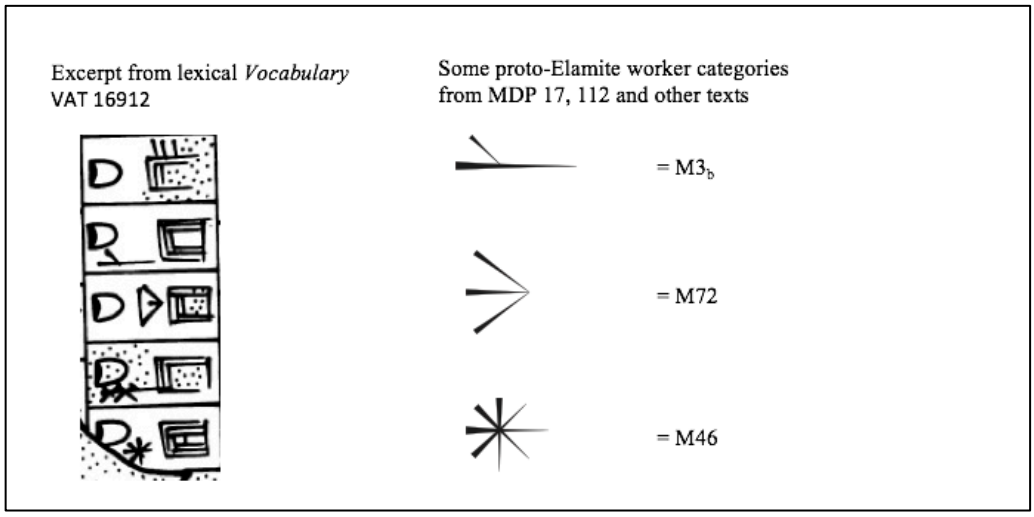


Figure 7.20: A possible comparison of proto-cuneiform and proto-Elamite human categories—noting the same order of appearance ($M3_b$—M72—M46 and PAP_a—SAL—(EN)—AN).

[175] W 14337,a + W 14337,b + W 14337,c + W 14337,d + W 14337,e (P000025)

Women's names in proto-cuneiform?

It has yet to be established whether any of the uses of SAL.KUR$_a$ or SAL in proto-cuneiform could reflect a specifically Sumerian lexeme geme$_2$ or munus. One avenue for exploring this possibility is to identify in the proto-cuneiform texts personal names that can be explained as geme$_2$- or munus- names comparable to those found in other third millennium corpora. This has proven extremely difficult: Sumerian personal names have not been securely identified in the proto-cuneiform corpus. Of a few possible 'names' in proto-cuneiform including the sign SAL just one is mentioned here: a number of combinations using SAL and PIRIG$_{b1}$ may form a personal or geographic name. Steinkeller read PIRIG$_{b1}$ SU$_a$ in these combinations as as (s)ug$_6$ 'lion' (1995: 707).

Text	**'name' or other designation**
W 02656,a	⌜SAL PIRIG$_{b1}$⌝ GIR$_{2a}$
W 15772,n	3N$_{57}$ PIRIG$_{b1}$ ⌜SU$_a$⌝ SAL
W 19948,5	[...] SAL ⌜PIRIG$_{b1}$⌝ SU$_a$
W 20274,13	SAL BA PIRIG$_{b1}$
W 15892,m	SU$_a$ SAL PIRIG $_{b1}$
W 21253, 5	ŠU SAL PIRIG $_{b1}$

Figure 7.21: A group of similar 'names' or other designations that appear in proto-cuneiform texts, including the signs SAL and PIRIG$_{b1}$.

The sign PIRIG$_{b1}$ (sign name after sum. Piriĝ 'lion') depicts a large feline head. Possible cultural significance of large felines in Late Uruk Southern Mesopotamia is suggested by the frescos at Uqair and the remains of large felines (perhaps a leopard and a lion) buried as a 'foundation sacrifice' under level B of the White Temple at Uruk (Perkins 1949: 111). A similar (but probably unrelated) placename SAL.PIRIG.TUR is attested in an Early Dynastic text from Nippur (Westenholz 1975: 35 no. 45 i:1), and Frayne (1992: 32) relates this to the place name PIRIG.TUR in the Early Dynastic *List of Geographic*

Names (see also W 20274, 124 for proto-cuneiform PIGIR.TUR in a fragmentary text), and translates the place name as 'panther town'. He locates this town along the Iturungal canal northwards from Adab.

Cultic and administrative personnel

Lecompte (2013; 2016: 34) recognized two cultic positions from the Early Dynastic *Cult Personnel List* as mentioned already in the Uruk administrative texts. The first is the 'Priestess of Utu (Larsa?)', listed in the ED texts as $nunuz_x$-zi Utu / $^{nu}[nunuz_x]^{nuz}$ which he identifies in CUSAS 1, 98 in the reading U_4 SAL ZI. Though it is difficult to confirm this reading, it is a possibility, and if correct it implies a reading $nunuz_x$ of SAL[176]. In this text, U_4 SAL ZI is associated with a capacity measure of emmer in the derived ŠE system Š*, in parallel to other (probable) personnel including U_4 EN_a BU_a $ARARMA_2$ (the U_4 EN_a BU_a of Larsa?). The second cultic title Lecompte recognizes in the proto-cuneiform texts appears in the ED list as $murub_2$ Unug, 'Priestess of Enki? (Uruk)' (Lecompte 2013: 155 n. 66 citing unprovenanced proto-cuneiform texts MS 2430 and HJN 11). The proto-cuneiform writing identified is SAL $LAGAR_a$ UNUG (SAL+ LAGAR = $murub_2$). Both texts are lists of personnel, including titles like GAL_a GA_a (LU_2 A: composite entry 20) and NIMGIR. To be added to this list, unpublished Uruk fragment W 20233,1 may attest to a female cultic singer with the entry NAR SAL A.

The Jemdet Nasr 'field of the EN' text (MSVO 1, 2) informs us that the EN_c.SAL was an important official—the one allotted the next largest plot of land after the EN. The metrological aspects of this text were discussed in detail by Friberg (1991). The

[176] nunuz is the eme-sal equivalent of munus.

combination may be understood as an En-'priestess'. The related text MSVO 1, 1 informs us that these plots of land may have been worked by personnel labelled SAL (and?) GURUŠ. The combination EN SAL is known already in the Uruk IV texts, but may be interpreted in different ways. For example, short text W 9579,l consists of two cases, separated by a dividing line:

1. 6 N_1 EN_b SAL GA_{2a1} x SUKUD
2. 5 N_1 SAL GA_{2a1} x SUKUD

Charvát (2014b: 172) suggested an interpretation of this text as 'EN's females of a type of storeroom' in contrast with (other) 'females of a type of storeroom'; another possibility would be that the contrast is between the storeroom of the EN_b SAL and that of her female personnel. The EN_b SAL also appears in Uruk IV in other texts including W 9656,ex. Most entries in this text apparently count cattle (bulls, GU_4 or cows, AB_a) in association with different designations, some appearing to relate to officials (e.g. UN_a $SANGA_a$ GU_4) including the EN_b SAL.

The sign NIN, attested in 16 archaic administrative texts (Green and Nissen: 1987: 256) is made up of SAL and NAM_2, and is easily relatable to the later cuneiform forms, where the sign means 'lady' (Akk. *Bēltum*). NAM_2 is a title which appears in many variations in the earliest lexical and administrative texts —including the highest title on the LU_2 list NAMEŠDA (NAM_2 + EŠDA), representing some sort of functionary (Nissen 1986: 329), and SAL NAM_2 in this way parallels EN SAL in its construction of 'female'+ 'title'.

SAL and PAP_a

SAL and PAP_a sometimes act as contrasting categories in proto-cuneiform texts, but the two signs also frequently occur in the same case. Figure 7.22 lists these. The meaning of

the combinations have not yet been established. By later cuneiform parallel, PAP_a could be Sumerian ugula, therefore tying these uses of SAL to the organization of a workforce. Monaco (2014a: 265 fn. 7) proposes reading E_b as a verb in several cases, suggesting a proto-cuneiform case recording SAL E_b PAP_a could mean 'sent to the PAP_a official, responsible for the female workers', and E_b SAL could be 'sent for the female workers'. However the common combination of SAL and PAP_a in other contexts suggests that the two signs form a title describing an office. Lecompte notes that the Early Dynastic II list of cultic personnel (attested at Fara and Abu Salabikh) includes a priestess written SAL PAP DU_{10} GIŠGAL, and a $nunuz_x$-zi PAP Nanna, commenting for the latter 'the addition of PAP seems to refer to a peculiar feature which is unclear to me here'. It is possible that this is related to a proto-cuneiform tradition involving cultic-administrative personnel with the sign PAP_a.

It can also be noted that a number of the designations in figure 7.22 include signs for animals. It is difficult to say if this indicates that PAP_a could function as a sign for a professional 'herder' (Šarzynska 2002) or whether the animal signs are being used in other ways—to represent human names, for example.

Sign combination	attestations		
	Uruk	Jemdet Nasr	unpovenanced
SAL PAP_a		2	7
SAL SAL PAP_a		1	
ŠU SAL PAP_a	3		7
SAL E_{2a} PAP_a		2	
MAR_a PAP_a SAL			2
MUŠEN PAP_a SAL	2		
$GUN_{3a/b}$ PAP_a SAL	1		2
PAP_a SAL DAR_a			1
$MAŠ_2$ PAP_a SAL	1		
SIG_7 PAP_a SAL			1
PAP_a SAL GIR_{3c}			1
TUR PAP_a SAL NI_a AL		1	
NUN_a PAP_a SAL UR_a	1		
BA SUHUR PAP_a SAL			1

Figure 7.22: Proto-Cuneiform entries including SAL and PAP_a

Upon collecting all uses of SAL and PAP_a together, it seems possible that the group involving one of the signs modelled on a bird (fig. 7.23) could feasibly represent the same designation. A comparison might be the DAM/DUMU MUNUS GUN_3 from the Ebla texts, the female cloth-dyers (Biga 2016: 84 / 2010), with PAP_a perhaps for 'overseer' (ugula) of the female dyers, as is common in later third millennium texts. In proto-cuneiform, GUN_3 is used in at least two other contexts (apart from the uses with PAP_a and SAL above) where it apparently referred to textiles (or fleeces). Both of these Uruk texts are unpublished: W 20274, 80 + W 20274,127 + W 20274,136 with three references to GUN_{3a} TUG_{2a}; and W 21662,1 which contains repeated uses of GUN_{3a}, $DARA_{4c2}$, and GI_6 GI (also references to dark and/or mottled colours?). As a descriptor for wool, GUN_3 is usually thought to refer to a mix of light and dark naturally coloured fibers in third millennium texts (Waetzoldt 2010: 202). The significance of these and the other combinations including SAL PAP_a listed in figure 7.22 remain elusive for the time being.

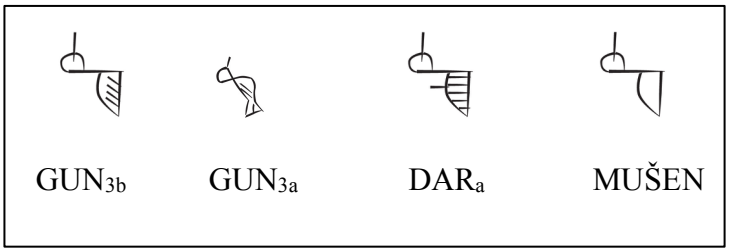


Figure 7.23: 'bird' signs sometimes used in conjunction with SAL PAP$_a$

Female animals

From the earliest proto-cuneiform texts, SAL was probably used to refer to both female animals and humans (Green 1980; Charvát 2014b: 169). Green pointed out the uses of SAL to indicate young female sheep (sum. Kir$_{11}$) and cattle (sum. Amar sal). In addition, Uruk text W 20572,1 (fig. 6.9) attests a SAL MAŠ (contrasting with a KUR$_a$ MAŠ) apparently as a designation for a young female goat, that differs from the sign ZATU 149 (Sum. Ešgar) identified by Green in other livestock texts. There are also various combinations of SAL with fish or bird designations, perhaps some of which are to be taken literally as female animals.

Finally, as with KUR$_a$, the sign SAL is also used standing on its own for adult equids. The reason for the particular similarity between human and equid designations remains unclear. Later Sumerian MUNUS.ANŠE was read eme$_3$, and this reading could be tentatively proposed for proto-cuneiform SAL in equid texts (noting the phonetic similarity to Sum. 'woman', possible /eme/, /mi$_3$/ [Krecher 1987]).

The unprovenanced texts published in CUSAS 1, 21, and 31 (Monaco 2007, 2014b, 2016, see figure 8.9) exemplify the strong similarity between human and equid accounting. In most instances, the sign SAL stood alone in a case to indicate the animal (or human), with the species possibly being known only from the summary, in these texts including the

sign transliterated by Monaco as KIŠ (an animal head). These and other texts in which SAL apparently refers to female animals—despite being a sign visually derived from *human* anatomy (a woman's pubic triangle)— highlight how the script from its earliest stage had formed associations such that signs could be used in multiple ways. The use of SAL for animals casts considerable doubt on the sign's interpretation as a human female in other contexts where it appears as a counted object, although the unequivocal uses for female cultic personnel and officials discussed above confirms that in many cases the sign represented human females.

Summary

The number of texts identified above, in which SAL might represent a counted slave, worker or ration-receiver, at c. 50 to 70 examples, can be put into the context of c. 6,000 proto-cuneiform texts and fragments. Direct references to workers, rosters of workers, and possible captives and/or slave trade documents were marginal administrative genres within the proto-cuneiform administration at Uruk, although significantly more possible examples of SAL as workers or slaves exist than do examples of human KUR_a males. Jemdet Nasr offers the strongest evidence that the designation SAL.KUR_a could refer to captives that were enslaved and entered into the workforce. Unlike KUR_a, SAL could be applied to describe women in a wide variety of contexts, from cultic and administrative personnel to grain-grinders and (probable) brewers. It is not known if the many more official/cultic titles attested in the proto-cuneiform record refer to males unless marked with the sign SAL, although it is almost certainly the case that explicit marking of SAL depended upon account context, and gender may have been assumed in many cases. As with all proto-cuneiform signs, attaching a single lexemic item (such as $geme_2$) to a sign

is not possible, and in many cases the sign may have conveyed meaning (here, 'female') in a linguistically-weak accounting context (Damerow 2006).

Returning to the question of marking gender, Yoffee (1995: 115) observed:

> as in languages (Greenberg 1966; Waugh 1982), the feminine is often the marked gender in historical documentation, because in early documents (from Mesopotamia and elsewhere) references to women are relatively rare and tend to connote extraordinariness.

It remains difficult to interpret whether proto-cuneiform uses of the sign SAL suggest that scribes were operating with a 'male' perspective that treated femaleness as 'exceptional'. It is generally held that *women's* labour was both most important and most common in the key productive context of the textile industry, which some textual and glyptic evidence suggests is a tradition that may have already been significant in the Late Uruk and Jemdet Nasr periods. The class and status associations of possible female textile workers in proto-cuneiform society remain unknown.

Chapter 7b: M72 as female workers in proto-Elamite

Introduction

An equivalent form, and to some extent equivalent function, is found between proto-cuneiform SAL and proto-Elamite M72, and M72 is proposed to represent 'women' in labour administration contexts in proto-Elamite texts (Damerow and Englund 1989a; 1993). The majority of texts recording M72 are from Susa; one is from Tal-i Malyan, four from Tepe Yahya, and at least two fragments from Tepe Sofalin, which are however too small to provide much information[177].

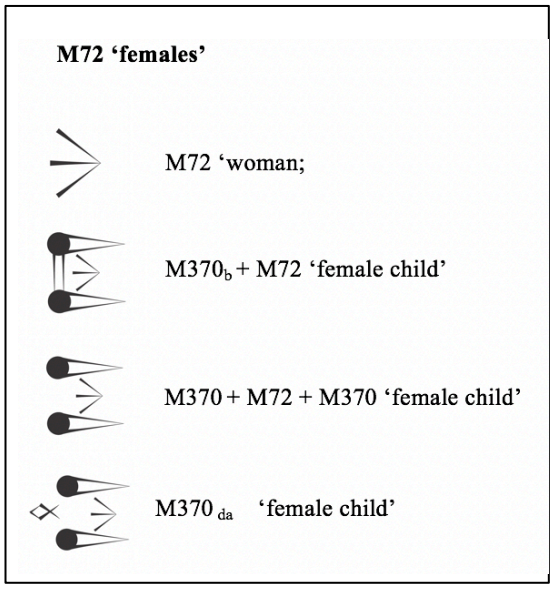


Figure 7.24: Signs that may represent women and female childrenin proto-Elamite

Sign form and graphical referent

Proto-Elamite M72 is the only sign in the writing system that is unequivocally modelled on a human body part—there are no human head, hand, or leg signs as are known in

[177] However, one of the Tepe Sofalin fragments preserves the sign combination M54 M72, suggesting that M72 was used in similar contexts at Sofalin to Susa.

proto-cuneiform (Dahl 2013). This apparent feature of the writing system, in combination with the lack of human figures in Classic proto-Elamite glyptic across sites where the writing system was present, led Dahl (2013) to raise the possibility that proto-Elamite scribal communities may have had a taboo against depictions of the human form. This is only a speculation, but until securely dated glyptic is discovered with classic proto-Elamite *human* figures, the lack of representations of humans can be taken as a hallmark feature of the culture. In the case of M72, it may be that the visual referent—a woman's pubic area—was obscured when proto-Elamite scribes borrowed the sign from the neighbouring proto-cuneiform tradition (if it *was* borrowed).

The form of M72 is well-standardised. However, there is the possibility for some confusion with a rarely attested sign that may relate to textiles (ZATU 644_a) as early as Uruk V (and on through the Uruk III period), as shown in the non-standard, perhaps Uruk V-date text from Tepe Sialk (Sialk 1631/ P009520) and one text from Susa (MDP 17, 169) (see figure 7.25). These documents may have close parallel with numero-ideographic tablets from Uruk, such as W 6881,o2+ab (Englund 1998: 54). For example, Sialk 1631 contains a numerical notation that does not conform to later bundling principles (a hallmark feature of numerical and numero-ideographic texts). The signs in these texts are included in the list which Schmandt-Besseret derives from token forms (1992, 2007; also Šarzynska 1988). On the one hand, this early point of contact (perhaps best described as a numero-ideographic tradition shared between Mesopotamia and southwestern Iran) is an appealing place to locate the origin of M72 in proto-Elamite and SAL in proto-cuneiform, but on the other hand these early signs are at present thought to relate to textiles rather than to the later signs for women. It is noted that the Uruk text in

figure 7.25 bears a sealing (not represented in the graphic) with a feline(?) striding, which is similar to the seal impression on the Susa example.

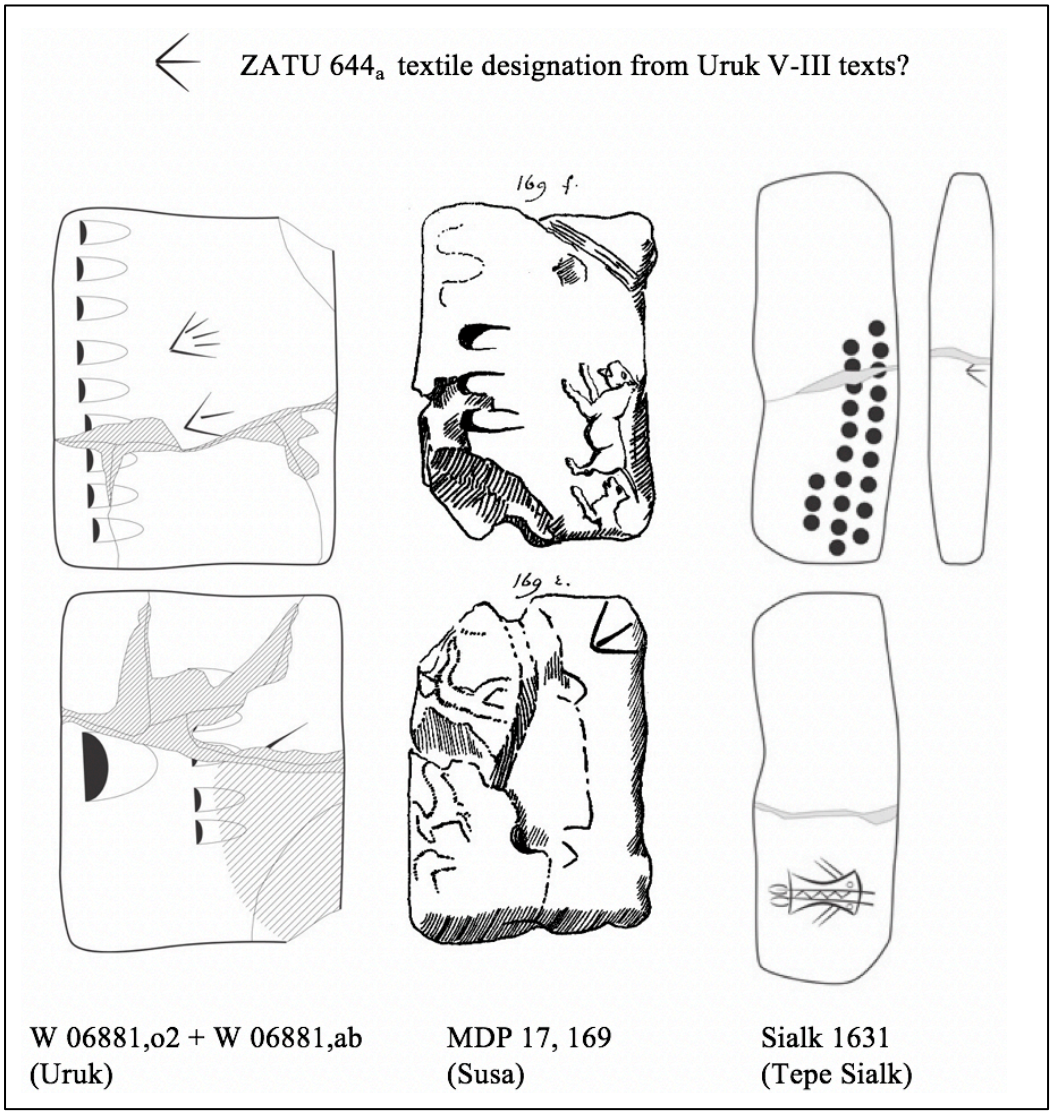


Figure 7.25: Early textile signs, not to be confused with SAL or M72 'female'

A sign attested three times, named M72a in Dahl's working signlist (fig. 7.26), may in fact relate instead to a set of signs with parallels to proto-cuneiform sila3 complex graphemes that may have related to cuts of meat or other elite rations (see comments in Johnson 2015: 194–5). In the three texts where it appears[178], the use contexts are

[178] MDP 26, 47 ; MDP 26, 441; MDP 31, 16. But note the similarity between text MDP 26, 288 which uses M72 (rather than the variant M72a) and MDP 26, 441.

sufficiently different from most other M72 uses to confirm it is unlikely to be related. This highlights the fact that the proto-Elamite signlist is still under construction, a process that requires access to high quality images of texts (or collations of the originals) to confirm sign forms as well as analysis of the use of signs.

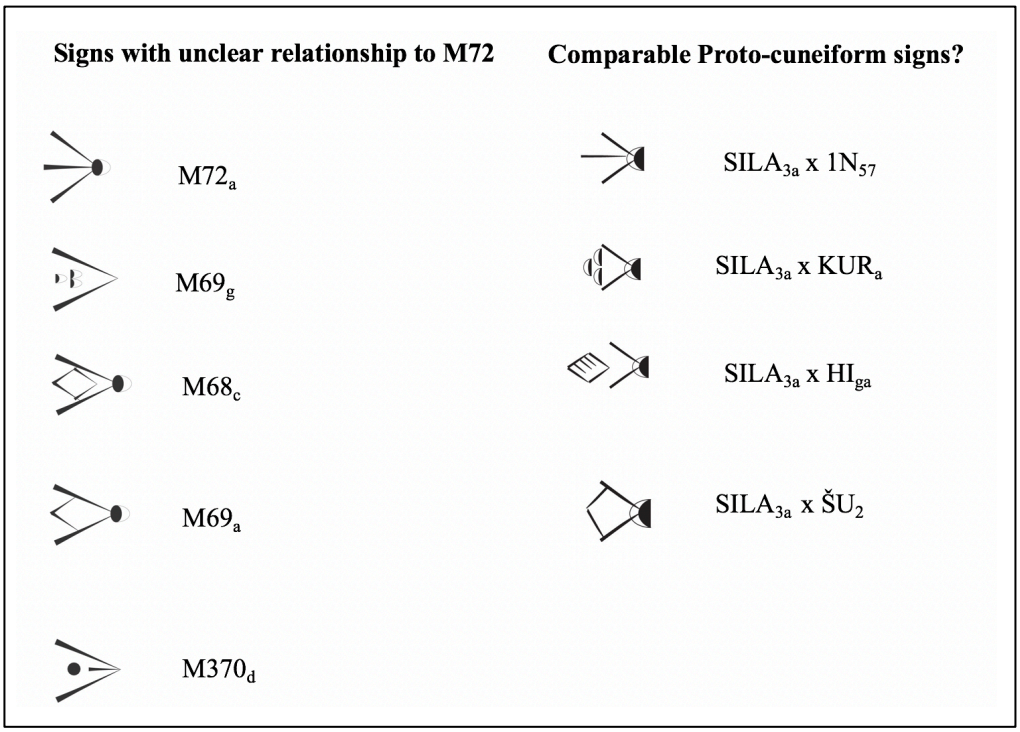


Figure 7.26 M72$_a$ is probably distinct from M72 in meaning. The similar complex graphemes in proto-Elamite and proto-cuneiform presented above may both relate to redistributive practices, since the proto-cuneiform sign is related to later cuneiform sila$_3$ = '1 litre'.

In contrast to the incorporation of M388 into many different complex graphemes, the only complex graphemes that M72 is used in are the M370 complex graphemes hypothesised to mean 'female child' (fig. 7.24). In one unusual instance (MDP 26, 297), the form of the sign M72 appears to be re-imagined by the scribe (fig. 7.27, 'M72$_x$?'). The sign is used in the text summary, where according to the line drawing by Scheil (1935), it represents the count of M72 appearing in the body of the text. However, this summary 'sign' appears to depict a woman's lower body including hips and legs. No photograph is available, and collation of the text, currently in the National Museum Tehran, is needed.

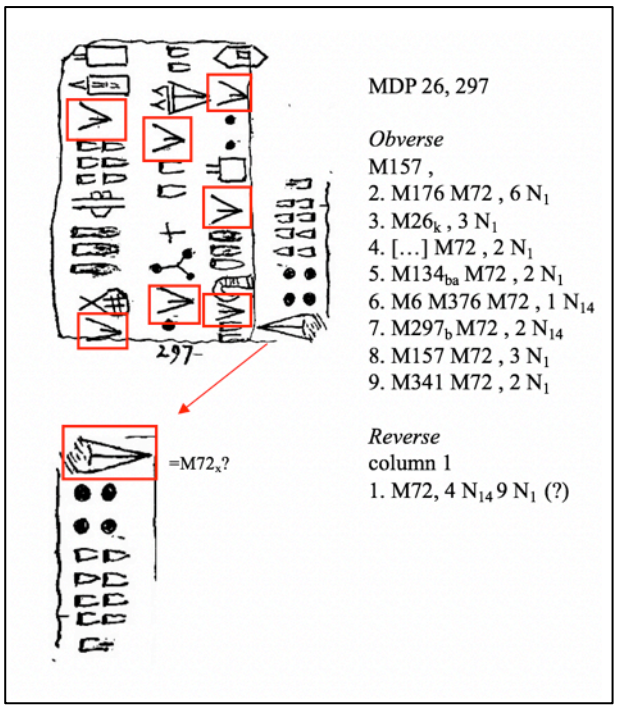


Figure 7.27: Text MDP 26, 297 records seven different 'types' of M72 summarised under an unusual sign-form,

Sign frequency and function

As noted in chapter 1, the sign M72 is less common in proto-Elamite than is SAL in proto-cuneiform: SAL is the 7th most common proto-cuneiform sign, and M72 the 24th most common proto-Elamite sign. A general conclusion drawn from this, and borne out in the use contexts discussed below, is that M72 has a more restricted meaning in proto-Elamite than does SAL in proto-cuneiform.

The use contexts of the 46 texts using M72 are explored in this chapter, with the conclusion that M72 was always or almost always a counted object sign. The texts in which it appears include an identifiable set of signs, and suggest that M72 had a relatively uniform usage that contrasts with the more diverse proto-cuneiform uses of SAL. For example, there is no evidence that M72 was used in personal names or in 'elite' administrative titles in the way that SAL was. Nor is there evidence to suggest that M72

was used in other ways, such as in place or household names. Its use in reference to animals is likewise not visible, unless the hypothesis that M72 in the ration texts represent women is incorrect, with these texts potentially including references to work animals instead.

The more restricted use of the sign M72 in proto-Elamite parallels the difference between proto-Elamite $M370_{(b)}$ combinations and proto-cuneiform TUR as well—while TUR is used in a variety of situations in proto-cuneiform, $M370_{(b)}$ combinations are limited (with rare exception) to a single administrative context in around a dozen texts. It is clear that both M72 and M370 were instead used in the same narrow administrative context in proto-Elamite, and were not used as fluidly as their proto-cuneiform sign counterparts which could describe things in various administrative contexts.

Simple Receipts

Some of the texts using M72 are one or a few lines in length (seven or eight texts from Susa and one from Tepe Yahya, see appendix nos. xiii–xix). The shortest is a small count of two ($=2N_1$) M72, which is the only information recorded in the text (MDP 26, 191 / P008879, appendix no. xiv); this text may be compared to Uruk receipt W 20854 (fig. 5.5f) counting two SAL and one KUR_a. Could this and perhaps other simple proto-Elamite 'receipts' represent similar cultural and economic contexts to the Uruk IV receipts (page 106 ff.), despite their cultural and apparent chronological separation?
A somewhat larger count of nineteen[179] M72 appears on elongated tablet MDP 17, 113 (appendix no. xvi). The numerical system used in this text and many other smaller proto-

[179] $=1N_{14}\ 9N_1$

Elamite receipts is uncertain, since the bundling principle $10N_1 = 1N_{14}$ is common to both the sexagesimal and the decimal system—the systems can only be distinguished for certain when a decimal count of 100 or above is recorded, because the sign N_{23} (= '100')

 is unique to the decimal system. At least one simple document including M72, text MDP 26, 397 (appendix no. xv) clearly uses the decimal system, since it includes 5 N_{23} (= '500') if Scheil's (1935) drawing is correct. The purpose of short documents like those presented in the appendix (xiii–xiv) is unclear.

These texts do not include multiple other signs for designations that might indicate households or personal names, as often appear on the earliest proto-cuneiform 'receipts' including SAL. They also never appear with parallel counts of M388, the way that SAL is sometimes paralleled with KUR_a in proto-cuneiform receipts. On the other hand, the inclusion of sign M54, the equivalent of ERIM (a 'yoke') in medium-length (e.g. appendix nos. xix, xxii–xiii, xxv, xxviii, xxx) and in the long ration texts with M72, suggests a link between the proto-cuneiform and proto-Elamite sign sets, and probably labour organization.

A ration receipt for M72?

There may be different kinds of simple documents including M72. There are the 'counts' of M72 and other worker categories known from Susa mentioned above, and there may be at least one possible 'ration' text from Tepe Yahya which records a count of thirty-six[180] nameless M72 plus two separate capacity measures (fig. 7.28/appendix no. xxxix). In this text, the first of these measures is $1N_1$ $1N_{39b}$ (=36 N_{30c}), and it therefore records a

[180] $=3N_{14}$ $6N_1$

'rate' of $1N_{30c}$ *per* M72, a 'rationing' rate comparable to the *proto-cuneiform* ration 'calculation' text MSVO 4, 27 (fig. 5.14; see Englund 1998: 181)—but twice the $15N_{30c}$

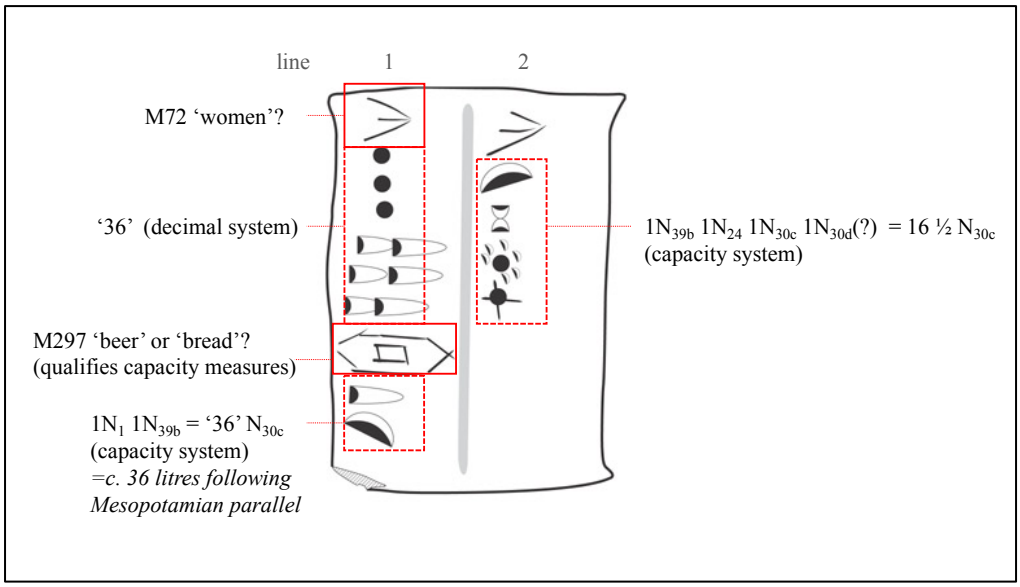


Figure 7.28: Tepe Yahya 12 counts associates thirty-six M72 with thirty-six N_{30c}, the proto-Elamite capacity unit candidate for roughly one litre.

Known from many other proto-Elamite texts. This is recorded in the second entry of the text following the sign M297, a sign which has been interpreted as a grain product, possibly 'bread' (Damerow and Englund 1989a) or 'beer' (Meriggi 1974). By current hypothesis, this text relates to the provisioning of a group of thirty-six M72 with a 'daily' distribution of grain or grain product made from a certain capacity of barley or wheat. However, the second capacity measure, following another M72 sign, complicates the picture. This capacity measure records the equivalent of 16 ½ N_{30c}[181], which is much closer to the commonly attested $15N_{30c}$ per worker ratio. The relationship between this capacity measure, the other measure thirty-six N_{30c}, and the thirty-six M72 is unclear. While a receipt for distribution to 'female ration-recievers' is a strong hypothesis for the context of this receipt, it is worth considering other options, for example by re-examining

[181] Although the smallest numerical unit recorded is difficult to identify, it may be a form of N_{30d}.

the possible relationship between M72 in this text and the sign $M72_a$, in light of comparison with proto-cuneiform $SILA_3$ (fig. 7.26), which could imply that Tepe Yahya 12 was a scribal calculation equating thirty-six counted 'litre'-sized vessels with capacity measures.

M72 and M388

M72 and M388 appear in under twenty texts in common. Six of these are the 'women and children' genre, where M388 is used most commonly in combination with $M370_b$ or in M370+M388+M370 probably to indicate male children, as well as in 'overseer' designations. As an 'overseer' designation, M388 appears *not* to be a parallel worker category to M72 and the other 'worker categories'. In the very long Ration Text 1 (Appendix, page 446), one of the summary entry categories, paralleling the summaries of M72 and the different $M370_{(b)}$ combinations, is M388 $M3_b$. A 'male(?) overseer' would be the conventional translation of this combination, following the initial interpretations of Nissen et al. (1993). In short, the only clear situations in which M72 and M388 are contrasted in a way that suggests a female-male distinction is in the $M370_{(b)}$ combinations for 'children' (chapter 8b). It may be only for these children that M72 and M388 function as opposing categories 'female' and 'male'.

One text indicates a comparable use of M72 and M388 to the proto-cuneiform designation $SAL.KUR_a$. This is text MDP 26, 205 (fig. 7.29), which provides very large decimal counts. It is stressed here that while the text suggests a possible comparison with $SAL.KUR_a$ $ERIM_a$ of the SAG x MA accounts, this is the single example of M72 and M388 used together in one designation for counted 'objects'. It is therefore difficult to be

confident in interpreting the count, which by 'Mesopotamian' reading of the signs could indicate 'male and female obligated workers'—recorded here at 1,776[182] in number!

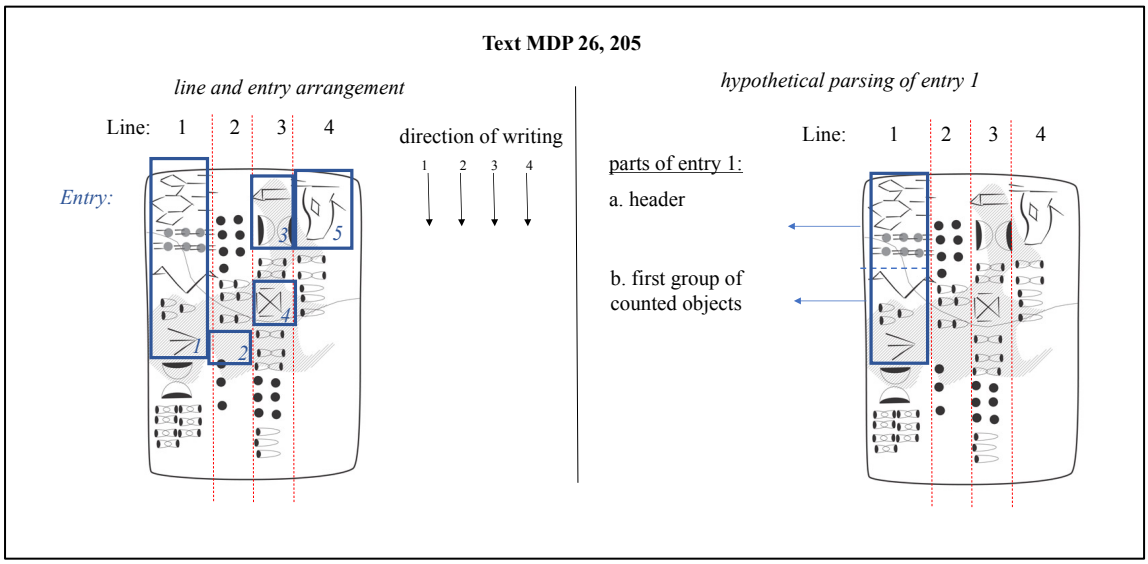
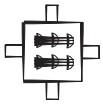


Figure 7.29: MDP 26, 205 may record a large number of male and female workers along with other counted objects. By hypothesis (see right above), The first entry might be broken down into two parts (a and b), including header information in part a that applies to the whole text, and description of the counted object ('yoked males and females'?) in part b. Reading  *as part of the header is supported by that sign's use in heading lines of other texts (e.g. MDP 26, 96 and MDP 26, 345) including sometimes as part of the 'heading' complex grapheme:* 

The 'animal head' M417$_h$ appearing in entry 5 may give some pause to the interpretation of these M53$_a$ M72 M388 as humans rather than yoked equids. In either case, the text implies a large scale labour-organization role on the part of the proto-Elamite scribes, assuming that the yoked animals were being used for plow-based agriculture or even transport of agricultural produce. M417$_h$ in the text acts as a parallel category to M53$_a$ M388 M72, and to two other categories, the only legible one appearing to be M101.

[182] The precise number of N$_1$ (representing 'one' each, up to ten) is unclear from the drawing and the text requires collation.

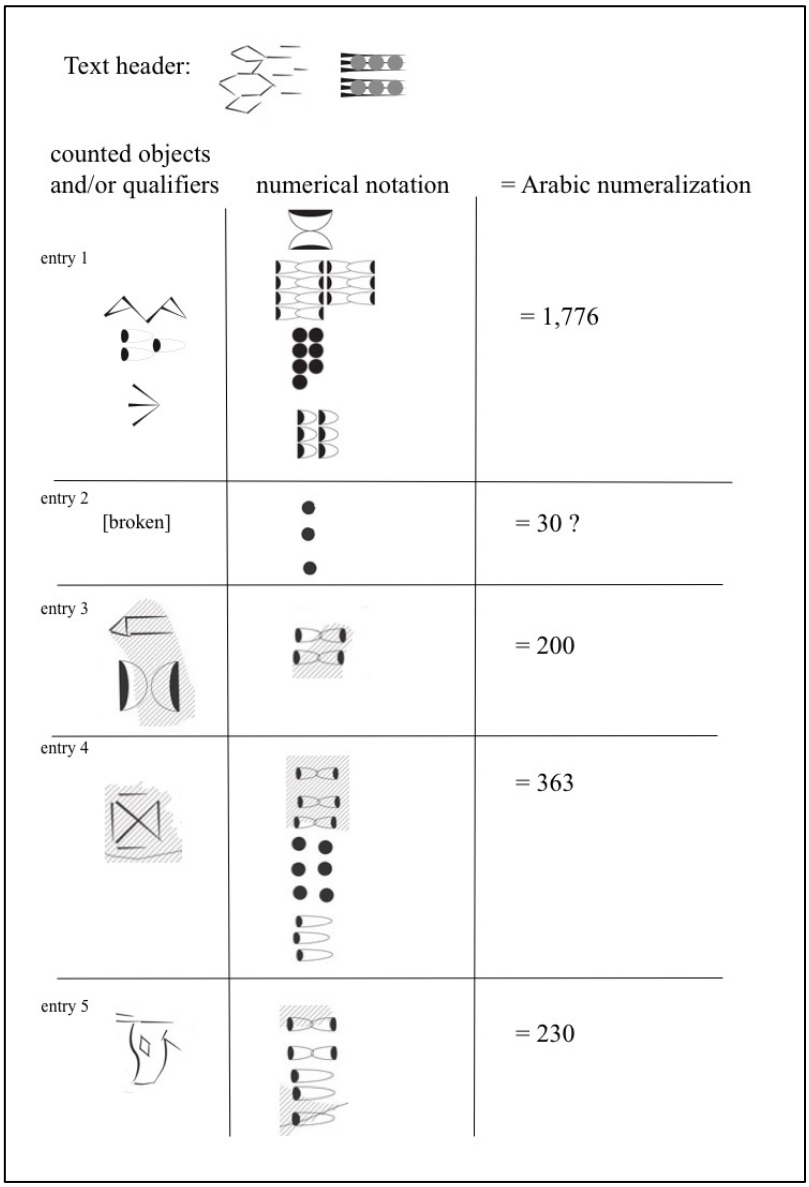


Figure 7.30: Schematization of the entries of text MDP 26, 205. Entry 1 may be read in other ways—for example, M53  *may either be part of the 'header' qualifying all entries of the text, or it may be part of entry 1 and indicate only what is counted in that entry.*

The combination M388 M72 is known in only one other context, where the combination may have a different interpretation. This is a Tepe Yahya text, in which most or all entries begin with M388: in line 16, the sign M72 is the second in the string following M388; it is followed by M371 M346. The last sign, M346 is the generic 'sheep' sign, repeated at the end of each entry of this text and thought to be the 'counted object', perhaps

following names of ‘owners’ or other individuals associated with the sheep. The entry might be parsed in the following way:

Personenkeil	+	individual’s name or designation	+	sheep ,	‘one’
M388	+	M72 M371	+	M346,	$1N_1$

This use of M72 among other strings thought to represent personal names or designations (not simply worker categories) is unique in the known proto-Elamite corpus, and may be related to a general difference apparent in the few uses of the sign at Tepe Yahya than is seen in the much more numerous Susian texts.

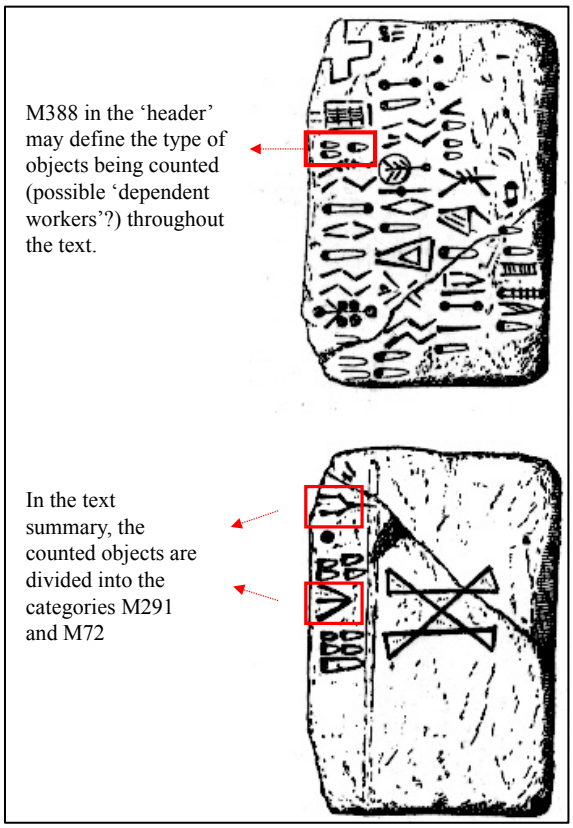


Figure 7.31: MDP 6, 290 uses M388 in the ‘heading’ line, where it might refer to the objects counted in the remainder of the text. Although the drawing does not preserve accurate information on the text content, it is clear from the text summary that five of these counted ‘objects’ are M72-‘women’.

The scarcity of entries recording M388 M72 as outlined above doesn’t necessarily mean M388 didn’t act as a category describing a ‘type’ of M72. This may in fact be the case in MDP 6, 290 (fig. 7.31) and MDP 17, 44 (appendix no. xxxii), where M388, as is typical, appears in the first entry of the text in a longer sign string. The summaries on the reverse of each of these texts include counts of M72, leaving the possibility that M388 was presented in the first entry of the text as a broader ‘category’ of human that applied

to some or all of the remaining text entries.

The correlation between M72 'women' and M370$_{(b)}$ 'children'

Around a dozen texts may use M370$_b$ combinations to record children in proto-Elamite texts (Dahl et al. 2018; appendix pages 446 ff.). *All* of these texts include M72 'females'. For four texts (three are fragmentary), M72 is included only in the form of young females (with M370$_b$ and M370 complex graphemes) but for the remaining nine, adult females (M72) are included in the texts as well. One could hypothesise that this strong correlation between the use of M370 complex graphemes and M72 could reflect labour organization traditions similar to those known from later cuneiform ration and roster texts, in which women and children are listed together, the standard example being the 'geme$_2$-dumu' texts of Lagash province (Maekawa 1980b). However, not all of the proto-Elamite long ration texts equally represent women, and in all the texts other categories of workers overshadow the number of M72-'women' recorded.

Through analysis of text structure, it is apparent that several other signs represent humans, animals, or things that are counted in parallel to M72 'females' and M370$_{(b)}$-combination 'children'. Dahl et al. (2018) discuss a few longer ration-and-work-team texts in greater detail and explore whether these signs might reflect 'worker categories' for workers recorded along with women and children in 'work teams'. None of the female (or male) 'children' —represented by M370$_b$+M72 or M370+M72+M370—are ever modified by the addition of other signs and therefore appear to be recorded without their personal names, but only by their age and gender category. While the signs modifying M72-women on the other hand are sometimes recorded along with other signs in an entry, the particular sign-set seems to be made up of a small, repeated set of 'worker category'

signs rather than a syllabary recording personal names. This contrasts with the proto-cuneiform texts, in which SAL.(KUR_a) and TUR were sometimes listed along with hypothetical 'naming cases'.

M72 in contexts without children

As might be expected in labour bookkeeping contexts, while all the texts that record children ($M370_{(b)}$+ x) include women (M72), not all the texts that record women include children. Apart from the text with children, just over thirty more texts record M72. These are diverse (appendix nos. xiii–xliv[183]), but the sign use presents basic similarities with texts including children. Figure 7.38 suggests that there might be some difference in the sets of signs that appear in entries along with M72 in texts with children than in those texts without children; however, a significant observation is that in both groups, M72 consistently appears in the final position in a set of signs (fig. 7.35–6), with an exception in a single Tepe Yahya text.

A mixed animal and female worker account?

Using text format clues as discussed below, it has been possible to begin grouping proto-Elamite signs into 'groups' of like objects (most securely, Dahl: 2005a for livestock signs), in this case hypothetical 'worker categories'. However, there are many texts that challenge these understandings. MDP 26, 214 (fig. 7.32a) is an example. It is a fragmentary text that adds a livestock sign (M367 for 'billy-goat' [Dahl 2005a: 90 ff.]; and possibly M346 'sheep') into the set of counted objects that are otherwise mainly recognized as 'worker category' signs (M54; M3; M373, M124). A schematic

[183] The appendix fragment nos. viii–x don't preserve entries with $M370_b$, but belong to the category of long rations texts which are expected to.

representation of this ‘list’ is shown in figures 7.32b–c. In most cases the text counts entries by one sign, and in a few cases it combines two of these same set of signs, or signs that can also be found in similar combination in ‘worker lists’, including the long rations texts with women and children discussed above (e.g. the sign combination M305 M54). No summary is preserved in this text to inform us if there is a higher-order category under which these signs are considered. Among the other entries, the text records six M72 ‘women’.

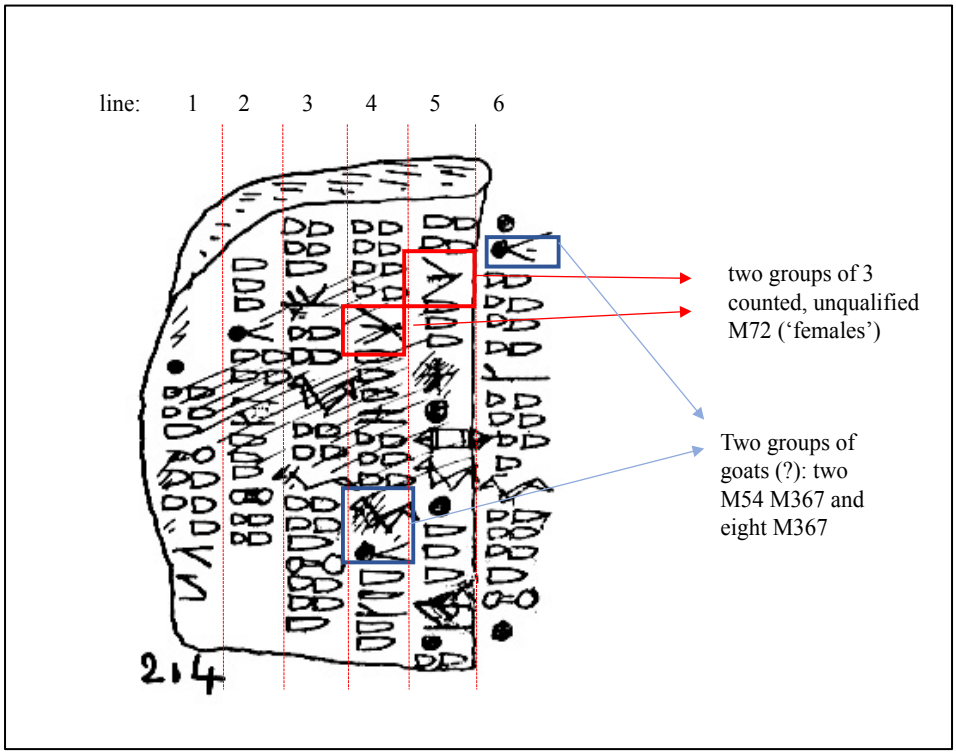


Figure 7.32a: Text MDP 26, 214 counts varying numbers of ‘objects’ including both M72 — (female humans or animals?), and M367 — ‘[billy?]-goat’ (Dahl 2005a).

Line	Translated count	Proposed translation	Proto-Elamite object sign
1	Fifteen...	[...]	
	Five...	[...]	
	[...]	[...]	
2	Three...	[...]	
	Four	billy-goats	
	Three...	[...]	
	Four	(worker category)	
3	Five...	[...]	
	Four...	[...]	
	Four	'yoked ones'	
	Five	?	
	Five	(worker category)	
4	Eight...	[...]	
	Three	females	
	One	'yoked' (?) billy-goat	 

Figure 7.32b Partial translation of MDP 26, 214 (above 7.32a). The text counts groups of unnamed 'workers', including a group of three unnamed M72 'females'.

Line	*Translated count*	*Proposed translation*	*Proto-Elamite object sign*
4	*Two*	*overseers*	
5	*Four*	*females*	
	Three...	*[...]*	
	Ten	*'yoked' M305*	
	Thirteen	*?*	
6	*Ten...*	*[...]*	
	Eight	*billy-goats*	
	Seven	*?*	
	Seven	*?*	
	Ten	*{worker category}*	

Figure 7.32c: Partial translation of MDP 26, 214 (continued)

M72 for animals?

The evidence from MDP 26, 214 and from another account associating 'billy goats' and M72 (text MDP 26, 51 appendix xxi) therefore raises questions about the relationship between M72 and livestock. M72 has not been securely associated with any known livestock signs in a manner indicating that the sign M72 itself represents female animals (see Dahl 2005a). In a pattern unique to Tepe Yahya (text 11, fig. 7.39), two sign strings end in M72 followed by M346, thought to be the sign for 'female sheep'. However, since the sign M346 already carries with it sex information, it seems unlikely that M72 refers to the sheep in these cases—instead, the text format suggests that M72 here refers to an 'owner' designation preceding the sheep.

Yet because of the use of SAL in some proto-cuneiform texts probably in reference to equids, we should also consider whether M72 acts in this way in proto-Elamite, either in addition to its use to indicate women, or even perhaps *instead* of. Dahl et al. (2018) outline the cumulative set of arguments for understanding the limited number of uses of M72 as relating to humans rather than equids in proto-Elamite (relating to the standard capacity measures associated with both M72 and 'named' individuals'), but the question is not definitively settled. Evaluation of the sign combinations including M72 may in future provided clearer answer to this problem.

Parallel counted objects and sign hierarchies

In many instances, M72 is known to be the counted object, since it is the only sign in a case. In others, it is combined with either the hypothesised 'worker category' (Dahl et al. 2018) or other undeciphered signs. As a 'worker category', M72 is found along with

several others that appear in texts, from short (SE 124) medium (MDP 17, 112) up to very long (MDP 17, 292). For example, the undeciphered sign M59 appears in three texts with M72 in ways that suggest the two are parallel 'person' or other categories: a short receipt MDP 26, 257, the more complex text MDP 17, 113, and Yahya 14[184]. M59 may therefore be a sign describing a 'work category' correlated with M72-individuals.

Dahl et al. 2018 identified a group of signs that appear to represent the 'worker categories' (fig. 7.33) in the very long rations texts including women and children. These worker categories overlap with the categories found in the shorter texts described above here. The worker category signs can be combined with each other or modified by the addition of other signs (such as M305). The implications of these sign-use patterns need further analysis in future studies targeting sign-order in proto-Elamite; such studies may especially benefit from computer-aided analysis of the sign-string and entry order patterns.

SE 124 (appendix no. xix) is a simple document that provides information about the classification of M72 in relation to other signs (figure 7.34). It counts 99 (= $9N_{14}$ $9N_{1}$) of the category $M207_{m}$. Forty-six M72 were subsumed under the category $M207_{m}$, alongside twenty-four M54 (the 'yoke' sign), eleven M373, twelve M46 (possibly 'young adults?') and six M370 (possibly 'children'). M207 itself looks like a fringed textile, but without independent information from the texts, identifications of signs based upon their forms cannot be confirmed. It is notable that M72 'women'(?) make up the largest group of 'workers' in this text.

[184] sign $M44_{m}$ in Yahya 18 (appendix no. xxxviii) may also be comparable to M59.

A different categorization of M72, with some similarities to SE 124, is MDP 17, 112 (fig. 5.28e). In this text, the same 'worker categories' appear, and are introduced in the same order—with the addition of M317 at the beginning of the sequence and no M370 at the end of the sequence. A number of other texts also use some signs from this set in the same order throughout the texts (fig. 5.25): Desset 2012 identifies 26 such texts. In chapter 7a, a comparison between this ordering and proto-cuneiform lexical *Vocabulary* is made, in that it lists PAP_a UR_{3b2}, SAL UR_{3b2}, and AN UR_{3b2}, in the same order as observed in this proto-Elamite hierarchy (PAP_a, SAL, and AN are graphical equivalents of $M3_b$, M72, and M46 respectively).

Sign name	Sign form	frequency in RT 1	frequency in RT 2	frequency in RT 3
$M3_b$		5	3	14
M32		0	0	2
M46		9	3	2
$M53_a$		5	1	0
M54		16	22	7
M72		6	15	1
M124		21	31	24
M370+M46+M370		1	2	1
M370+M72+M370		5	1	0
M370+$M373_a$+M370		0	0	1
M370+M388+M370		1	4	0
$M370_b$+M72		6	3	4
$M370_b$+M388		3	3	3
M371		3?	11	17
M373		8?	14	3
$M373_a$		0	0	8
M376		0	13	5
M388		1	10	20

Figure 7.33 : Basic worker category signs in long ration texts identified by Dahl et al. (2018). RT = 'Ration Text' 1–3.

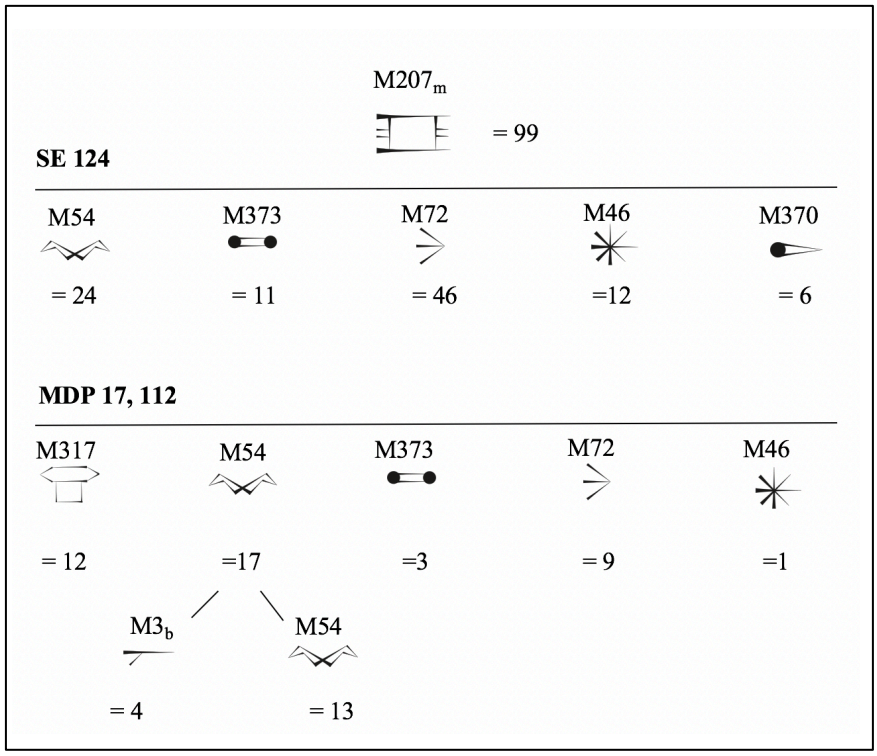


Figure 7.34: Sign hierarchies in texts SE 124 and MDP 17, 112, along with the total 'count' of each of the signs in the texts, transliterated from the proto-Elamite numerical systems. In SE 124 all ninety-nine individuals divided between the five 'worker' categories are summarized under the single label M207$_m$. In MDP 17, 112, one of these worker categories, M54, is used to summarise both the counted M54 and the counted M3$_b$ in the body of the text, suggesting M3$_b$ could be a sub-category of M54.

MDP 17, 112 has no single summary designation (like M207$_m$ in the text discussed above), but instead the text summarises numbers of each individual category (although the category M3$_b$ is subsumed under the count of M54 [Hawkins 2015]). The exact proportions of each type of worker vary between the two texts —in MDP 17, 112 there are almost twice as many M54 as there are M72, whereas the reverse is true in SE 124. However, both texts contain many more M54 and M72 than the categories M371 and M46. Another medium-length document, MDP 26, 472 (appendix no. xxviii) presents similar categories and adds a few others: in this way, the number of signs understood to be 'worker categories' can be constructed by piecing together information from different texts.

While there is a certain level of consistency in sign use, some texts present challenges. MDP 26, 297 (fig. 7.27 and 7.37/appendix no. xxvii) appears to present varying-sized groups of seven different 'types' of women (M72) that are all summarized as simply M72. With the exception of line 6 (M6 M376 M72), the signs further describing each M72 in this text are not of the familiar 'worker categories' set shown in figure 7.33.

Sign ordering within entries

One characteristic feature of the attestations of M72 is its location in strings of signs. In all the texts from Susa, M72 comes consistently at the end of the string (fig. 7.35 and 7.36). The exceptions to this rule is the Tepe Yahya sheep text mentioned above (and fig. 7.39). Corpus-wide, there are a few dozen signs that directly modify M72 (fig. 7.38). Four of these signs are shared between the two groups (M157, M124, M297/$_b$, M376), and the rest are distinct to each group (although with the few attestations of each set); it is difficult to say if this represents a distinction of the 'types' of M72 in the large ration texts versus the other documents—certainly M54 (see fig. 7.38 top sign in the right column) does occur in the 'women and children' texts, though not, in currently known texts, in an entry directly modifying M72 (instead it is known as a parallel category in other text entries).

In other ancient script decipherments, signs appearing consistently in one location in a string of signs, such as the end or the beginning, have provided clues about verbal morphemes or noun declensions (e.g. for the decipherment of linear B). However, in proto-Elamite, textual clues including summary designations have indicated that the signs in final position of a proto-Elamite sign string may represent the 'counted' object (such as

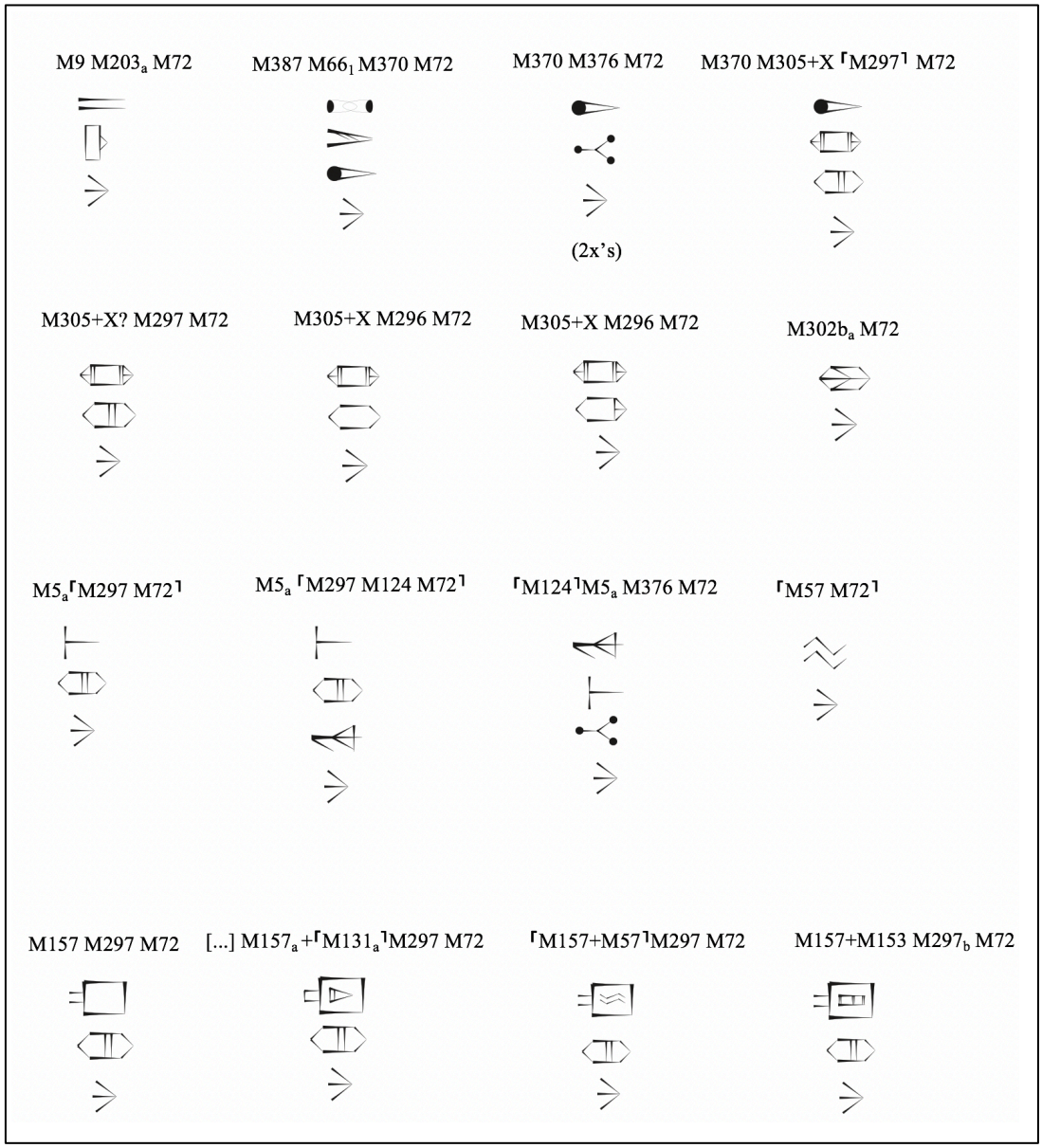


Figure 7.35: All proto-Elamite sign combinations that include M72 from the 'women and children' text genre. M72 appears consistently at the end of sign strings. These sign strings present some similarities in sign ordering, and the set of signs mostly differs from those in M72 texts where no M370 'children' appear (fig. 7.36). The results presented reflect the entire text corpus, excluding only some broken combinations with uncertain readings.

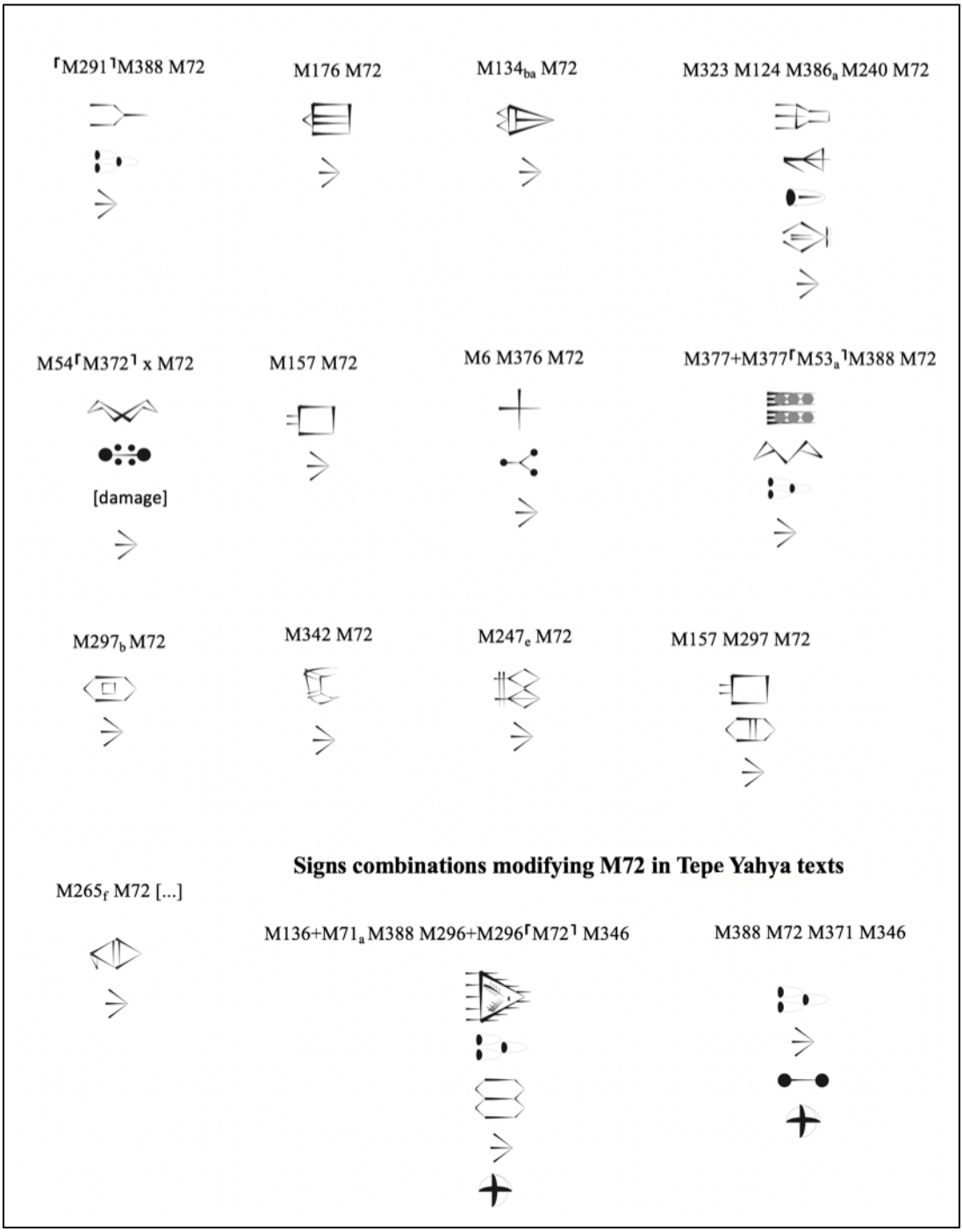


Figure 7.36: All complex designations of M72 'women' in texts where no 'children' (M70) are recorded. M72 appears consistently at the end of sign strings, excepting Tepe Yahya 11(fig. 7.39). The results presented represent the entire text corpus, excluding only some broken combinations with uncertain readings.

Sign combinations modifying M72 in 'women and children' texts

Text	*Entry*
MDP 6, 246 + 269+ 302 + 332	M9 $M203_a$ M72
MDP 17, 292	$M302_{ba}$ M72
MDP 6, 316 + 322 + 324 + MDP 26S, 335 + Sb 15247	M305+X ⌜M296 M72⌝
	M305+X M297 M72
	$M5_a$ ⌜M297 M72⌝
	$M5_a$ ⌜M297 M124 M72⌝
	⌜M124⌝ $M5_a$ M376 M72
	M370 M376 M72
	⌜M57 M72⌝
	M157+M153 $M297_b$ M72
MDP 6, 243	M387 ⌜$M66_l$⌝ M370 M72
MDP 6, 315	M370 M376 M72
	M157+M57 M297 M72
MDP 26S, 333	M370 M305+X ⌜M297⌝ M72
	[...]⌜$M157_a$+$M131_a$⌝ M297 M72
MDP 26S, 339	M157 M297 M72

Sign combinations modifying M72 in other texts

Text	*Entry*
Sb 15212	⌜M291⌝ M388 M72
Sb 19517	M176 M72
MDP 17, 112	M323 M124 $M386_a$ M240 M72
	M54 ⌜M372⌝ […] M72
MDP 26, 194	$M247_e$ M72
MDP 26, 205	M377+M377 ⌜$M053_a$⌝ M388 M72
MDP 26, 288	$M265_f$ M72 [...]
MDP 26, 297	M176 M72
	$M134_{ba}$ M72
	M6 M376 M72
	$M297_b$ M72
	M157 M72
	M342 M72
MDP 26S, 339	M157 M297 M72
Yahya 11	M136+$M7_a$ M388 M296+M296 ⌜M72⌝ M346
	M388 M72 M371 M346

Figure 7.37 : Texts in which the sign sets in figures 7.35 and 7.36 appear

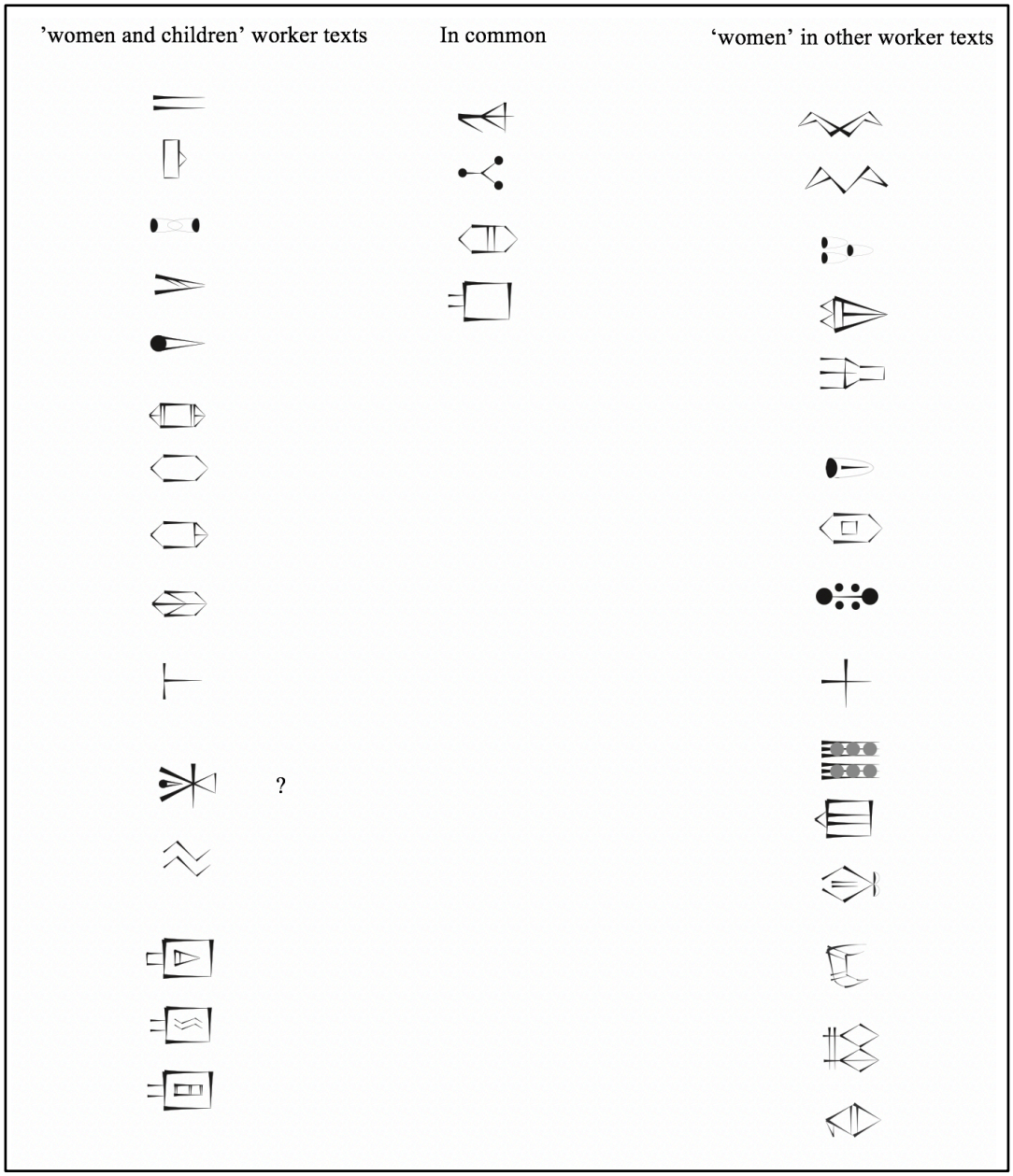


Figure 7.38 The signs used before M72. In text entries of the 'women and children' texts (left column), signs used before M72 are mostly distinct from those in other texts.

the M346 ‘sheep’ in Tepe Yahya 11, 7.39). Other peculiar sign-ordering principles deserve more attention in future studies. It has not yet been shown whether proto-Elamite sign strings such as those in figures 7.35–6 include syllabic (or mixed syllabic-logographic) writings, simple strings of objects, heraldic (genealogical?) symbols put in conventional order, or other combinations of sign-types. For the time being, a few observable sign-order rules from the combinations including M72 can be mentioned. M157 + x always comes at the start of a string. M305 always comes before other signs with the same basic shape but with modified strokes inside. When M376 is used (three times) it comes directly before M72. In a few cases, however, some variation in sign hierarchies can be observed: M124 comes before M5 in one text, while in another it comes after M5 M297. This latter text is also the only exception to the tendency (in 10 texts) for M297 to come directly before M72.

Elite women?

A significant observation is that the important Susian household represented in text MDP 6, 5242 (fig. 6.31–2) does not include any entries with the sign M72—this could either reflect a lack of ‘women’ in the text, or perhaps more likely, a lack of M72-class women. There is no clear evidence from the sign use patterns to suppose that the many designations which, by current hypothesis, represent personal designations or titles throughout the proto-Elamite corpus are all ‘male’ unless marked with M72. In contrast to M72, a number of the use contexts of proto-cuneiform SAL are in association with elite individuals, so ‘elite’ women are often more visible in proto-cuneiform. It is possible that instead of acting as an abstract ‘female’ marker as in proto-cuneiform, M72 may have referred specifically to low-class females, female slaves, or working women perhaps associated with a particular work context, if not female animals.

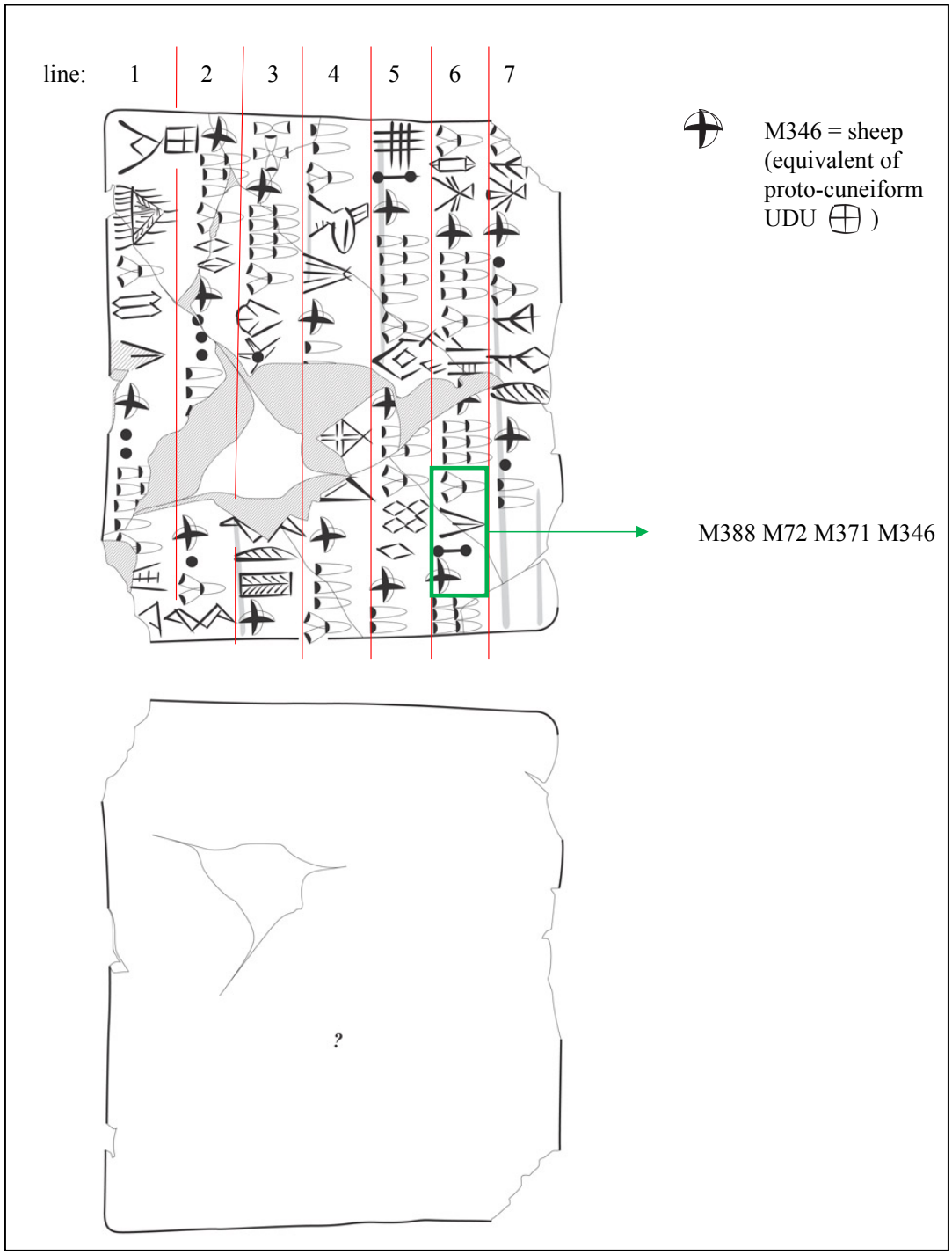


Figure 7.39 Tepe Yahya text 11 (Damerow and Englund 1989a) presents a different use-pattern for the sign M72 than do texts from Susa.

Tepe Yahya text 11: regional variation in the use of M72

M72 is used in four of the 27 texts from Tepe Yahya. One of these, TY 11 (fig. 7.39), was discussed above for its use of M72 in a way that contrasts with the Susa evidence, in that the sign appears in a location other than the end of the sign string. One could speculate on possible linguistic differences at Tepe Yahya that would produce sign ordering unfamiliar from Susa; or simply alternate bookkeeping practices relating to livestock or personnel. More examples would be needed to draw any conclusions.

Conclusions

The list in figure 7.40 includes all known proto-Elamite texts that record M72 'women'[185]. Many of these texts are broken, leaving an even smaller number available to study the contexts in which M72 is used. From these few texts, representing only 3% of the proto-Elamite corpus, a few conclusions can be drawn.

M72 was used in a less flexible and more specific way than was its graphical equivalent in proto-cuneiform, SAL. The distinction between a more diversely used SAL in proto-cuneiform and the restricted use of M72 in proto-Elamite mirrors the situation for proto-cuneiform TUR and proto-Elamite $M370_{(b)}$ combinations for young people or subordinates, which also show the proto-cuneiform sign to be the more multi-valent and extensively used.

There is a strong correlation between the use of M72 and the $M370_{(b)}$ combinations in proto-Elamite, suggesting that their application in that script was within an accounting

[185] Only PETF 1, 002 lacks an image or line drawing.

context in which women or female animals were often recorded in texts with children or young animals. However, with the exception of the complex graphemes for male and female children, M72 is not paralleled by M388 the way that SAL is paralleled by KUR_a in the small but important sets of proto-cuneiform 'slave trade' and animal accounts. For example, there is no parallel bookkeeping context in proto-Elamite to the proto-cuneiform 'named slave' $SAL.KUR_a$ account W 23999, 1.

The contexts in which M72 appears have been interpreted as 'counted women', and these women are, so far as can be observed, not provided with 'personal names', though occasionally modified by 'type', and are counted alongside other 'types' of things (Dahl et al. 2018). At the same time, the use of M72 as a category in parallel to several others presents interpretive problems. Does M72 represent a specific class or category of women—or are we to assume that the parallel categories *all* belong to men of different classifications? Can we be certain that the correlation between M72 and M54 (the 'yoke' sign) doesn't indicate that M72 records female equids in contexts where M54 represents specifically 'yoked' animals? At present the proto-cuneiform parallel sign SAL remains the most crucial evidence in assigning a value 'woman' to M72—however, it is clear that the two signs have quite different ranges of application in their respective writing systems.

M72 ‘women’ in proto-Elamite texts

Fragments

TSF 7
TSF 10

Simple receipts including M72

MDP 17, 113
MDP 17, 184
MDP 26, 191
MDP 26, 257
MDP 26, 397
MDP 26, 415
SE 124
Yahya 12

Medium-length accounts including M72

MDP 17, 210
MDP 26, 51
MDP 26, 194
MDP 26, 205
MDP 26, 206
MDP 26, 214
MDP 26, 288
MDP 26, 297
MDP 26, 472
MDP 26S, 4848
MDP 31, 16
MDP 6, 390
MDP 6, 290
MDP 17, 44
MDP 17, 112
MDP 6, 287
Yahya 18
Yahya 11
Yahya 14
KADMOS 24, 6

‘Very long ration texts’ with women and children

MDP 17, 234
MDP 06, 246 + 269+ 302 + 332
MDP 17, 292
MDP 6, 311
MDP 6, 315
MDP 6, 316 + 322 + 324 + MDP 26S, 335 + MDP 26S, 336
MDP 6, 243
MDP 6, 315
MDP 6, 343
MDP 26S, 333
MDP 26S, 339
MDP 17, 368
SE 121
MDP 26S, 5218
PETF 1, 002

Longer accounts (not using M370 combinations)

MDP 26, 303
MDP 6, 243

Figure 7.40 This list presents all known proto-Elamite texts that use the sign M72, dividing them broadly into groups reflecting the completeness and length of the texts, and finally distinguishing between those longer texts including M370 children (the majority) and those not including children.

Chapter 8a: Proto-cuneiform texts recording young people

Introduction

In later third millennium administrative texts, young children are recorded attached to female workers and receive smaller ration-sizes than adults; several age categories can appear, with staggered ration levels presumably related to the increasing labour ability of young people (Gelb 1965; Waetzoldt 1972). Non-working young (infants) also receive rations and may be seen as latent labour potential in these contexts. The most well-studied examples of children in third millennium accounts are those attached to female weavers in pre-Sargonic and Ur III Lagash province (Maekawa 1980b; Waetzoldt 1987, 1988).

Half a millennium earlier, children may already appear in a handful of proto-cuneiform administrative texts. Much of the available proto-cuneiform evidence remains ambiguous and difficult to interpret, particularly given the similarity between accounting practices relating to livestock and humans. Englund (2009) identifies proto-cuneiform age-group designations which he suggests relate directly to labour productivity in a similar manner to the later third millennium examples. That is, young human age categories are indicated in proto-cuneiform as a tool to gauge human labour resources and household expenditure of grain or other products in the context of redistributive practices.

A few documents (listed in fig. 8.2) provide the only evidence for reconstructing young human categories in early cuneiform. These texts are all of the Uruk III script phase, excavated from Uruk, Jemdet Nasr, or are of unknown origin, some probably coming

from illicit diggings in the area of Umma (Monaco 2010: 7–10). Englund (2009) relied upon three of the most well-preserved accounts to discuss evidence for slavery in early Mesopotamia, and all of the longest accounts (excepting MRAH O.4995) have been reproduced in various publications. Altogether only around twenty texts and fragments, identified by their use of the sign TUR or other sign combinations discussed below which may indicate human age categories, can offer evidence for labour or human resource bookkeeping practices relating to young humans. This chapter describes the evidence and concludes by suggesting some possible administrative contexts for the different types of texts identified.

The TUR sign

The sign TUR is the basic sign for 'child, dependent' in later cuneiform, and it seems also already in proto-cuneiform. Significantly, this sign is paralleled in the proto-Elamite signs $M370_b$ and M370+X+M370 for children (discussed in chapter 8b). In proto-cuneiform, TUR is sometimes used to represent a young person, either by itself, in combination with gender indication (KUR_a or SAL), or with the signs $ŠA_3$ (infant?) or EN (unknown meaning). However, the majority of uses of the sign TUR in proto-cuneiform are in contexts that are probably unrelated to human age categories.

Identification of the early form of the TUR sign by comparison with its later form is simple, although this is not the case for all proto-cuneiform signs. Definitive evidence for the identification of TUR can be taken from the lexical tradition in which the IM_a

TUR[186] of archaic Lu_2 A can be compared with the later versions (archaic Lu_2 A is a lexical list running in to the Old Babylonian period).

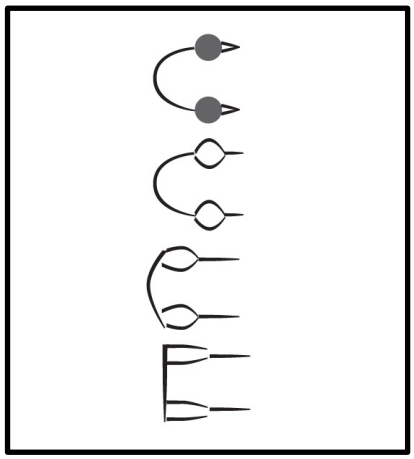


Figure 8.1: Forms of the TUR sign in proto-cuneiform (Green 1987: 296)

The earliest TUR signs were written using the back of the stylus to make two circular impressions, and rendering the remaining parts with a stylus. Later forms 'drew' the circles with the tip of the stylus instead of stamping them with the back, and finally the circles became more triangular—this process follows the expected progression of cuneiform signs from more curvilinear to more 'chicken-scratched' forms. Within this process, a number of elements in the TUR sign exhibit variation. The transformation from earlier to later sign forms may have happened very quickly within the Uruk IV period since Uruk IV texts already attest both 'earlier' and 'later'-looking forms. The form made with circular impressions is most similar to proto-Elamite $M370_b$, which supports other observations about the early date of sign sharing between proto-cuneiform and proto-Elamite.

[186] The meaning of this title is not known. The entry is contrasted with GAL_a TUR_a, and Krispijn (2016: 2) proposes to understand the pair as '(adult) worker with clay(?)' and 'junior worker with clay(?)'.

Glassner (2003: 147), in contrast to Damerow (2006: 1), argues that signs must have had a linguistic connection, in particular a (Sumerian) sign name, from their inception. According to Glassner, possible visual referents for signs cannot be taken as a 'basic' meaning while other meanings are derived—instead, a whole set of related meanings were deliberately applied to a sign at the outset. TUR is a polysemic logogram from the start, he argues; he then provides the range of values in Sumerian **dumu**, **tur** and **banda$_3$**, and an English semantic range of 'child', 'small', 'young' and 'weak'. For this study of the Uruk IV and III texts, the sign name TUR is used by convention, with no implication that proto-cuneiform had a solely or even primarily Sumerian linguistic connection, a subject open to debate (Englund 2009: 7–8 n. 18). A weakness of Glassner's discussion is that it does not investigate the possibly changing semantic range of signs. For example, it has not been shown by contextual study of the sign use whether or not all of the above meanings are attested from the earliest period, a matter addressed here.

The visual referent proposed by Englund (2009: 13) for the TUR sign is a woman's breasts or (Glassner 2003: 152) an animal's udders. The underlying idea for this proposal is that a primary meaning of 'child' (and by extension the meanings 'small' or 'lesser' as an antonym of 'GAL', as well as the familial meaning 'son/daughter/heir (of any age)') came about through the idea of breast-feeding, much like a 'suckling' in English can be a synonym for 'young baby'. Glassner takes issue with Englund's visual etymology on the grounds that another sign already exists in the archaic corpus, gaba (DU_8), which later clearly mean 'breast(s)/chest'—however the graphical form of DU_8 is quite different and doesn't appear to depict specifically a woman's breasts. Glassner

claims that the visual 'rationale' behind the TUR sign is less concrete than Englund suggests, instead probably connected to the LAGAR sign which indicates a class of women[187]. There is in fact no indisputable way to match signs like TUR with a supposed object in the world, and a more productive approach is to simply establish the range of uses of a sign for any given period.

Sign use in later cuneiform

In later cuneiform, the TUR sign in Sumerian has a number of meanings. Sumerian tur as a verb can mean 'to diminish, make small' (Akk. *ṣuḫḫuru*) or 'to be small', and relatedly it means 'small' as an adjective. It is one of only a few Sumerian adjectives that does not add an 'a' vowel to the base; this is also true for its antonym GAL (Thomsen 2001). With DAM it probably indicates a 'lesser' wife rather than a young wife. When read as a Sumerian noun it is **dumu**, 'child', equated with Akkadian *māru* and *mārtu* 'son' or 'daughter', and sometimes gender is indicated in the Sumerian as well, with **dumu-munus** or **dumu-nita** (Behrens and Steible: 1983: 85–86 and references), although it is significant to Sumerian kinship structures to note that the term is basically ungendered. All of the above meanings suggest a general semantic range of 'subordinate' in size or importance.

Before the Early Dynastic III period, identification of children in administrative texts with the sign TUR is difficult. In the Early Dynastic (so-called 'archaic') texts from Ur (UET 2), the TUR sign appears 46 times in 33 texts, out of the corpus of 373 tablets

[187] Glassner 2003: 152–3. This suggestion may be interesting in the context of the M370 'worker category' in proto-Elamite. The sign M370 is graphically 'half' of M370b (the TUR 'equivalent') and might, at a stretch, be visually comparable to LAGAR. M370 is used in the 'women and children' rations texts as well as other contexts (see chapter 8b).

and fragments. Represented in 8% of the texts, this stands in sharp contrast to the preceding Uruk III and IV periods, in which less than 1% of texts attested the TUR sign. However, meanings of TUR other than 'dependent child' in the ED I-II Ur texts are apparent for most or all of those uses, summarized as follows:

1. elements in personal names (10 times, possibly many more)
2. the Sumerian administrative title nu-banda$_3$ (11 times)/other titles (2 times)
4. designations of small or young livestock (1 time?)
5. modifying products (wood, ale jars, ropes?) (4 times)
6. other unclear designations, including possible field names (15 times)
7. 'personnel' designation(?) TUR DILMUN (3 times)

In text UET 2, 364, one case of TUR SAL (dumu munus?) is recorded with 1 bur'u 1 bur of land, in a case following that of the E$_2$ GAL (palace) with 1 bur'u 6 bur, 3 eše$_3$ 2 iku of land. This case precedes a HI SAL GURUŠ with, like the TUR SAL, 1 bur'u 1 bur of land. The placement of TUR SAL and HI SAL GURUŠ in cases next to each other suggests in fact these are human gender and age or status categories. It is difficult to venture further in interpreting whether the TUR SAL represent mature 'daughters' of the palace, that is 'female personnel' (perhaps in the way that DUMU in the Fara texts and onwards stands for 'dependents' or simply 'men' of a large household), or immature dependent females in contrast to HI SAL GURUŠ[188].

Overview of uses of TUR in proto-cuneiform

While TUR is not an uncommon sign in the proto-cuneiform corpus (Englund lists it as the 32nd most common sign with 197 attestations at the time of his counting)[189] it only rarely occurs in situations where it can, given our current understanding of proto-

[188] Compare Richardson's reinterpretation of the Old Babylonian term DUMU.MUNUS LUGAL as not biological 'daughters' of the king but 'an institutional class of votaresses without families to support them, thus afforded legal protections as dependents of the King's household' (2017: 68).
[189] Englund 1998: 70

cuneiform, be shown likely to represent young humans. The remainder of uses are either too fragmentary, have found no later or contemporary parallels for clarification or, as in the majority of cases, exhibit the other characteristic uses of the sign TUR, discussed below. For the Uruk IV period, the sign is not very frequently used— and of those uses *no* definitive attestations of young people can be identified, as is shown in the following section[190].

Identifying humans in the proto-cuneiform record is not straight-forward. The following criteria have been used in this chapter to identify when TUR may be used in reference to 'children':

1. TUR is not better explained as an adjective describing a 'small' product, an animal, or an official's designation
2. TUR is used with the signs KUR, SAL, AL, $ŠA_3$ or variants of U_4, when these are not proven to reflect animal designations
3. the above conditions especially in the presence of complex sub-cases that may provide human names
4. (in 4 cases) in texts summarised with the designation SAG x MA (a roped human head) and $ERIM_a$

Uruk IV uses of TUR

The number of attestations of the TUR sign in the Uruk IV is quite small. Out of a total of approximately 1860 Uruk IV texts catalogued on the CDLI, there are 36 uses of TUR in 32 texts of the Uruk IV period, none of which provide strong evidence to suggest that the sign is functioning to mean 'human child'[191]. SAL and TUR do not

[190] Bartash (2015) made the claim that the use of TUR for children was an innovation of the Uruk III period. However, this is not certain since further finds of Uruk IV texts could change the picture. After all, the use of TUR for children in Uruk III is itself rarely attested.

[191] A possible exception is the Uruk IV fragment from Uruk, W 14111,?2 (Nissen and Englund: 2005) with the transcription EN.TUR, that represents one of the scheme 2 age grades (see below)—however, the sign TUR is not visible in the image (see CDLI P001982).

appear in any of the same texts known from the Uruk IV period (of c. 56 Uruk IV texts using SAL). However, W 6940,a does include $5N_1$ TUR listed before 5 GURUŠ (personnel?), which could feasibly represent 'young workers'. Other entries in this fragmentary text include livestock designations and the purpose of the account is not clear.

Examining the uses of TUR in the Uruk IV texts offers the important insight that the sign is multi-valent from the earliest attested evidence. Two cases of a jar modified by the TUR sign occur in unclear accounts. Similarly, two cases of a TUR $SILA_3$ (modified litre measure?) appear. In these texts, TUR modifies a type of $SILA_3$, in the cases $SILA_3$ x MAŠ TUR and TUR $SILA_3$ x GEŠTU. It is possible that these represent 'small' measures of particular kinds; this type of designation, naming a measure 'small' or 'large' is known from later periods[192]. Four separate metal objects modified with the TUR sign appear in two administrative texts listing metal objects with varying numerical entries[193]. These two texts were excavated from the same locus, and while ATU 6 (Englund and Nissen: 2005) considers them Uruk IV period, Englund et al. (1993: 21) had dated them to an Uruk III.3 period. The metal designations are AN TAG TUR; NAGAR AN TUR; NAGAR AN TUR; and AN UR x TAR TUR. None of these designations occur in the Uruk III period 'metals' list[194], of which the composite contains 122 unique entries.

[192] e.g. Powell 1989: 489 for a 'little shekel' (**gin_2 tur**) and 'little mina' (**mana-tur**)
[193] ATU 6, W 13946, b and W 13946, n1, pl. 27 and 30
[194] Although, see Metals 56b UR_2 +TAR AN [TAR_a] (W 24008,11) where TAR_a is reconstructed, and could possibly be compared to AN UR x TAR TUR from the administrative text discussed above, with a phonetic reading for UR_2.

The TUR sign was not included in M. Green's table of archaic livestock designations. However, TUR and livestock designations appear together in a few Uruk IV texts. The first is a single-case receipt counting $1N_1$ UDU TUR (W 15893,a) with further unclear qualification ZATU802 RAD_a. The second, W 9579, cg is a simple account with two cases:

$3N_1$ MAŠ
$4\ N_1$ TUR
ZATU 631

This indicates that TUR might stand for some young animal category, one that differed from MAŠ, which is already known to represent immature male goats (Green: 1980: 5). These uses could offer (albeit meagre) support to the notion that the TUR sign was initially closely related to the concept of suckling (Englund 2009: 13), and might here distinguish between young weaned and un-weaned goats. However, by comparison, an Uruk III text, CUSAS 1, 65 uses the designation $MAŠ_2$ TUR in a text with other counted livestock, where it may refer to a small adult male goat ($MAŠ_2$ = adult male [Green 1980:5]).

A number of unclear uses of the TUR sign also occur. One such designation is a short account with three cases and a summary of $6\ N_1$ that may represent six workers of different categories. The summary line reads TUR $Arina_x$ (wr. BU_a x BU_a NA_{2a}); Arina is a geographic name possibly in the area of Nippur[195], and a suggested reading is 'personnel' from Arina. Texts listing troops or personnel attached to households, clans, or geographic locals are common in the later Early Dynastic texts, including those from Fara (Visicato: 1995 7–59 the **dumu-dumu** and **guruš** texts). Finally, at least six texts in the Uruk IV (and many more from the Uruk III period) also offer evidence that the

[195] Frayne: 1992: 121–2 n. 279

sign occurs as a modifier to administrative titles. The titles with which it appears in Uruk IV, that can be positively identified as such, are SANGA and EN (see discussion below), although the latter in particular might be interpreted as a term for 'subordinate staff' (Johnson 2015) with unclear connection to the official EN (see discussion page 385 ff.).

Uruk III uses of TUR

The CDLI returns a result of 334 instances of TUR in 237 texts of the Uruk III period, and the more diverse administrative uses of the sign as known from the Uruk IV period continue. Even though the proto-cuneiform corpus cannot necessarily be taken as representative of the whole (see Nissen 1986: 332 for one reason to suspect this), it is still striking that of the 4,878 texts and fragments from the Uruk III period catalogued on the CDLI[196]— less than a dozen of these offer strong evidence that the sign indicates a category of young humans, with around an equal number offering far less conclusive evidence for this (altogether, represented in figures 8.2, 8.4, and 8.6–7). The texts identified here with children make up approximately half the number of accounts that Englund (2009: 15) cited as recording slaves; the remainder of those 'slave' texts record (as far as can be determined) only adults. These numbers contrast sharply with Asher-Greve's conclusion that there are '197 entries for small persons ('TUR')…[indicating that] a large segment of the workforce consisted of female and male slaves, prisoners or forced labourers, and children' (2008), and highlight the importance of the approach taken in this dissertation.

[196] Accessed March 19, 2017

Proto-cuneiform texts that may record children (scheme 1)

Publication	Text number	P number	Provenience	Figure 8.4
MSVO I	212	P005279	Jemdet Nasr	i
	213	P005280	Jemdet Nasr	j
	214	P005281	Jemdet Nasr	k
ATU 5	W 6372	P000760	Uruk	f
ATU 6	W 15860,a4	P002438	Uruk	b
ATU 7	W 22104,3	P004554	Uruk	c
BagM 22	W 23999,1	P004735	Uruk	a
CUSAS 21	190	P387504	Umma (?)	l
CUSAS 31	27	P387752	Unknown	g
—	W 17729, bp + bx	P002694	Uruk	e
	W 17729,fg	P002789	Uruk	h
—	W 17729, dp	P002746	Uruk	d

Proto-cuneiform texts that may record children (scheme 2)

Publication	Text number	P number	Provenience	Figure 8.6
MSVO 1	220	P005287	Jemdet Nasr	b
ATU 3	W 15772,l	P000037	Uruk	d
ATU 6	W 15772,p	P002296	Uruk	e
	W 15772,z	P002306	Uruk	c
	W 14731,s	P002107	Uruk	j
BagM 22	W 20274,2	P003500	Uruk	a
Unpublished	MRAH O.4995 =Talon 1	P005573	Umma (?)	l
	MS 2863,18	P006184	Umma (?)	i
	MS 2863, 27	P006193	Umma (?)	h
	W 15825, a2	P002414	Uruk	g
	W 15825,a1	P002413	Uruk	f
	W 20573, 3	P003921	Uruk	*image unavailable
CDLJ 2009	MS 3035	P006268	Umma (?)	k

Other proto-cuneiform texts that may record children

Publication	Text number	P number	Provenience	Figure 8.11
ATU 5	W 9655,t	P001392	Uruk	a
ATU 7	W 19408, 54	P003090	Uruk	b
ATU 6	W 14777,e + W 14777,r1	P002181	Uruk	c
CUSAS 31	19	P006426	Umma (?)	d

Figure 8.2 Proto-cuneiform texts that possibly reference young humans. The majority of the identifications of possible young peoples are through uses of the sign TUR.

The proto-cuneiform texts are not to be considered statistically representative of urban economic activity as a whole; yet the top-down methodology used here, through carefully defining the available evidence, leads to the conclusion that scribal practices in the Uruk III period only exceptionally involved recording dependent children. If all texts cited in figure 8.2 record children, this is still less than 1% of Uruk III texts known so far.

Nonetheless, since the archaic Ur texts (following proto-cuneiform at the beginning of the Early Dynastic period) do not provide clear records of children, the few Uruk III accounts discussed in this chapter provide the most detailed textual information on children available until 2600 BC. Figure 8.2 provides a list of the 28 texts that *may* include reference to children (26 including use of TUR possibly in this way). The figure represents what can be considered the maximal number of texts among the known proto-cuneiform sources, though many are fragmentary and ambiguous.

Human age categories: two differing administrative terminologies

By approaching three accounts[197] in light of tablet formats known from animal husbandry texts, Englund (2009) shows that they may record totals of humans in a series of cases and sub-cases. He extracted from these texts a list of proposed age categories (2009: 15). Although Englund included these terms together, they can be divided into two usually distinct sets of administrative terms—those recording gender with the terms KUR_a and SAL, along with age categories TUR and $ŠA_3$ + TUR/SAL/KUR_a (scheme 1) and those involving EN.TUR, AL, and 'yearling'

[197] W 20274,2; W 23999,1; MS 3035

designations U_4 +1–3 N_{57} TUR but do *not* record gender (scheme 2)[198]. The two different sets of designations may reflect differing administrative contexts. However, this distinction is irrelevant to the recently published equid accounts of unknown origin, which mix most features of both of these systems in a number of texts that, through the inclusion of an equid head in the account, can be understood as small-scale equid herding records. The distinctions between these three broad sets of terminologies including age designations are discussed below.

Texts of scheme 1: gender and age designations in proto-cuneiform

Texts of scheme 1 are the most relevant for parallel with proto-Elamite through their use of SAL, KUR_a and TUR, and they display features which suggests they may be rosters of 'slaves'. These texts use KUR_a and SAL to refer to male and female adults, as well as various combinations for young humans: $ŠA_3$ (in the form of KUR_a $ŠA_{3a1/2}$, SAL $ŠA_{3a1/2}$, or $ŠA_{3a1}$ TUR[199]) and/or TUR. Texts can summarise both adults and children with SAL.KUR_a (e.g. W 23999,1 figure 8.4a). Ten or eleven of these texts can be more confidently identified as accounts including gendered adults and young humans (8.4 a–e, g, i–l, and 8.9a), while two further texts (8.4 f and h) use $ŠA_3$ and SAL in an ambiguous context. This group of around a dozen texts is indeed a slim body of evidence upon which to establish a set of administrative terminology. However, some of these signs and sign combinations are used in similar ways in texts recording

[198] Bartash (2015: 136) also came to this conclusion, although he did not mention that the two categories are mixed in equid accounts.

[199] This proto-cuneiform combination $ŠA_3$.TUR should probably not be confused with later Sumerian **ša$_3$ tur$_3$** meaning '[child in the] womb', even if the latter is attested with the syllabic spelling $ŠA_3$ TUR in the context of an incantation (Krebernik 1984: 212). The meaning 'child in the womb' is not possible at least for $ŠA_3$ KUR_a/SAL which are explicitly gendered. Futhermore, in the one Uruk example in which the term itself does not indicate gender, $ŠA_3$.TUR are listed separately under groups of men and women, implying gender (and certainly not implying a child in the womb when listed in the men's section).

adult and young animals (see below), lending support to their interpretation as sex and age markers.

Gender and age categories	SAL.KUR$_a$	KUR$_a$	KUR$_a$ TUR	SAL	SAL TUR	TUR	ŠA$_{3a1}$ KUR	ŠA$_{3a1}$ SAL	ŠA$_{3a1}$ TUR	ŠA$_{3a2}$ KUR$_a$ TUR	SAL UR$_5$	
Text												
W 6372				(SAL KI)				X				
W 9655,t		X		X								
W 15860,a4		X		X					X			
W 17729,bp + bx	X	X		[X]					X			
W 17729, dp					X							
W 17729,fg								X			X	
W 22104,3	X			X						X		
W 23999,1	X	X		X					X			
MSVO 1, 212	X			X		X						**+ *SAL AL TUR**
MSVO 1, 213	X	X		X		X						**+ *AL**
MSVO 1, 214	X			X								
CUSAS 31, 27	X		X	X	X		X	X			X	
CUSAS 21, 190					X							

Figure 8.3: Age and gender designations in scheme 1 texts. Texts from Uruk, Jemdet Nasr, and of unknown origin that may record SAL and KUR$_a$ adults along with children. Two texts counting SAL UR$_5$ (female millers?) seem to belong to this terminological set.

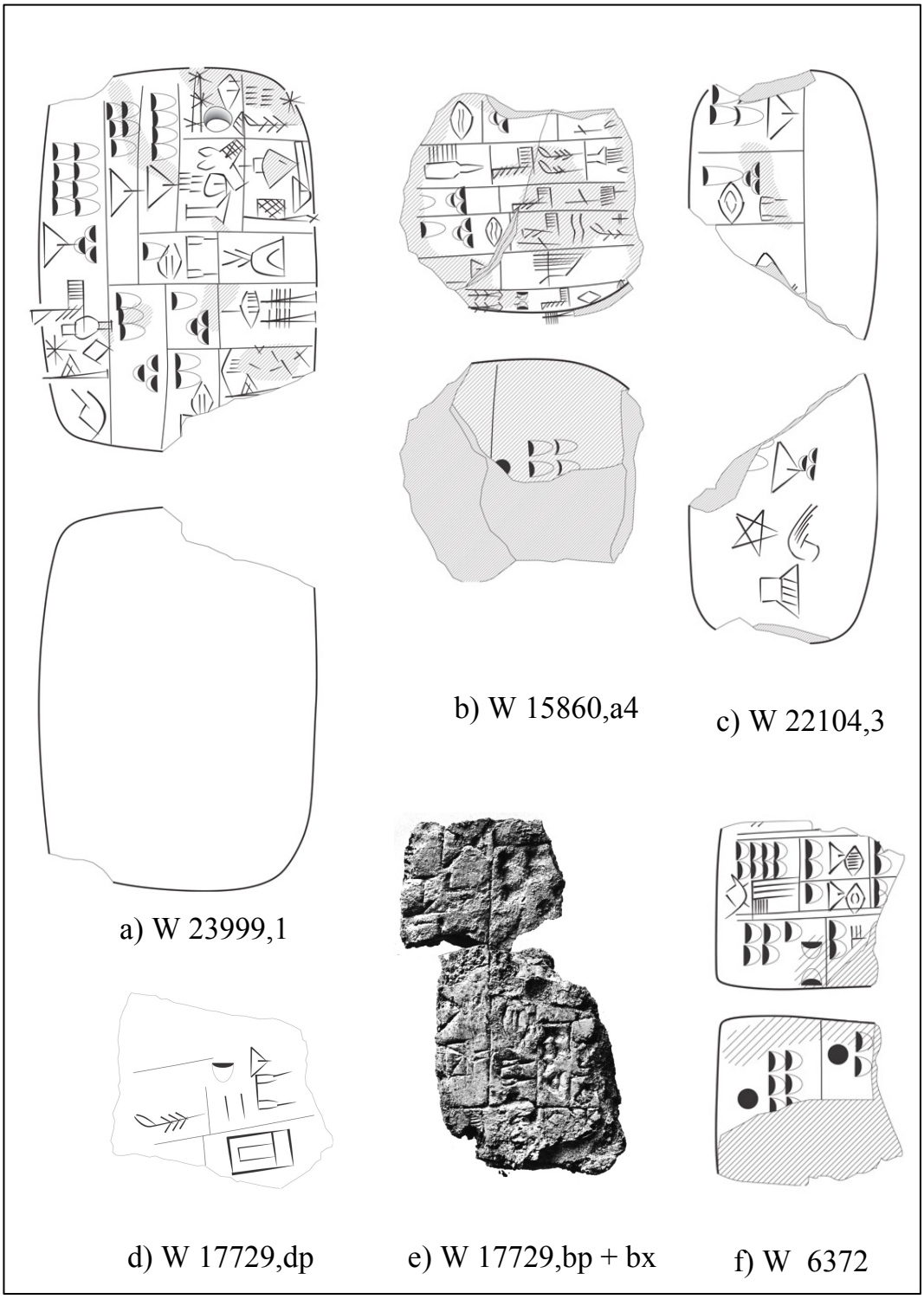
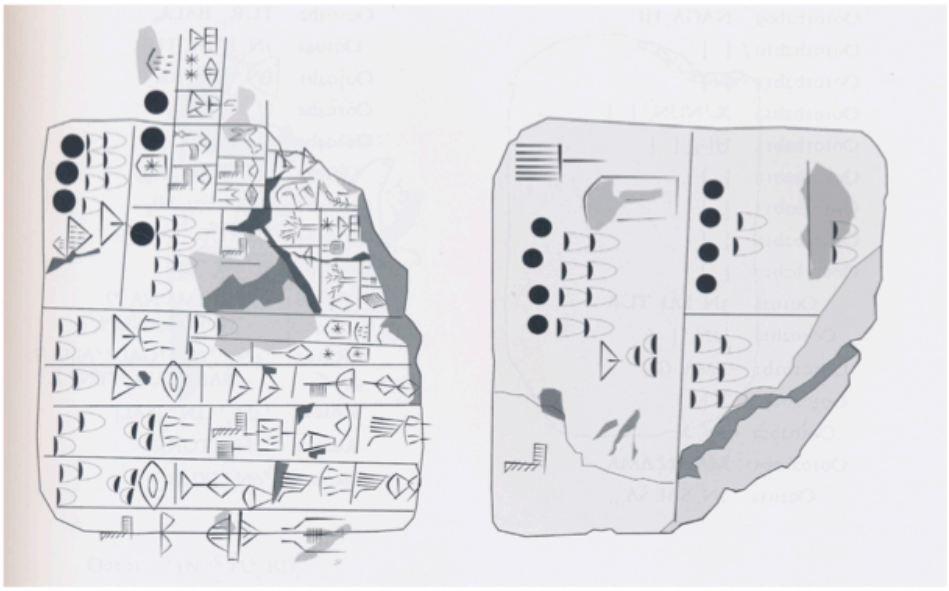
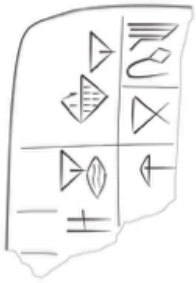


Figure 8.4(1): Figure 8.4 Scheme 1 texts (part 1). Proto-cuneiform texts from Uruk that may record adult and young humans by gender and age with the terminological set of scheme 1.

Female millers (?) (UR_5 SAL) with children ($ŠA_{3a1}$ SAL/KUR,TUR)



g) CUSAS 31, 27



h) W 17729,fg

Figure 8.4(2): Scheme 1 texts (part 2). Two texts may record female millers, possibly along with young females (SAL $ŠA_{3a1/2}$).

i) MSVO 1, 212 j) MSVO 1, 213 k) MSVO 1, 214

l) CUSAS 21, 190

Figure 8.4(3): Scheme 1 texts (part 3) i–k are three related texts from Jemdet Nasr that record male and female captives (SAL, KUR_a and SAL.KUR_a SAG x MA and ERIM) which may include a few children (TUR). Text l is a receipt of unknown origin that uses a designation (TUR MEN) also found in the Jemdet Nasr texts.

The age category ŠA$_{3a1-2}$

The sign ŠA$_3$ is one defining feature of scheme 1 texts. Its uses in proto-cuneiform could match well with the later-known **ša$_3$ dug$_3$**, a Sumerian phrase with its earliest identification in pre-Sargonic texts from Lagash (Gelb 1965: 239)[200]. Applied to humans, the term in pre-Sargonic texts may represent an age category older than **dumu gaba** (suckling infants) and younger than adults. The distinction between **ša$_3$ dug$_3$** and **dumu** (TUR) is not clear, and both terms are used in the same corpora; this distinction may be observable already in proto-cuneiform (text CUSAS 31, 27 fig. 8.4g). The term is also used for immature livestock in the Ur III period[201] and similarly in proto-cuneiform, which highlights the inter-changeability of the concept of 'immature' for humans and animals in administrative contexts across the third millennium. While Englund's (2009:15) reconstruction of proto-cuneiform age designations suggests ambiguously that ŠA$_3$ (TUR) are 'very young', like later administrative documents the unprovenanced proto-cuneiform texts suggest that at least for animals ŠA$_3$ are older than the yearlings. For humans in the proto-cuneiform texts, this comparison is impossible to make since ŠA$_3$ (TUR) does not occur in texts with the year indications (which are texts of scheme 2). Instead we can observe that two young age groups of males, KUR TUR and KUR ŠA$_3$ are contrasted in text CUSAS 31, 27 of unknown origin (fig. 8.4 g). If ŠA$_3$ in proto-cuneiform stands for later Sumerian **ša$_3$ dug$_3$**, it may be added to the small list of evidence for a Sumerian linguistic influence in the early texts, in this case a kind of syllabic acrophony for a longer Sumerian term. Another posited use of proto-cuneiform ŠA$_3$ with the Sumerian syllabic value /**ša$_3$**/ is the writing

[200] Also subsequently, Bartash 2015: 133 ff.
[201] for both sheep and goats (Gelb 1965: 239) and pigs as **šah$_2$ nita ša$_3$ du$_{10}$**/ **šah$_2$ munus ša$_3$ du$_{10}$** (Dahl 2006: 34).

of the placename $ŠA_{3a1}$ BU_a in the proto-cuneiform lexical *Cities* (line 50 composite), for later known *ša-bu-nun* (Krebernik 2007: 43).

W 23999,1: A slave trade account with children?

Uruk text W 23999,1 (fig. 8.4a) is the most complete account from Uruk with the scheme 1 terminology. It lists $SAL.KUR_a$ distinguished by first sex, then age, and then provided with what Englund (2009) suggests are personal names in the final sub-cases. The text only distinguishes between adults (SAL and KUR_a) and children of one age category, $ŠA_3$.TUR. The designation $ŠA_3$.TUR itself does not indicate gender in this text, but it appears that the male and female $ŠA_3$.TUR are categorized next to the male and female adults respectively. $ŠA_3$.TUR are listed with 'names', just as the adults are. In this text, one (female) $ŠA_3$.TUR occurs with four adult females, and two (male) $ŠA_3$.TUR are listed alongside one adult KUR_a. In the totals represented by the higher-order cases, the $ŠA_3$.TUR are included so that the account total 4 females (SAL), and 3 males (KUR_a); and at the highest order the text represents 8 $SAL.KUR_a$, associated with an unclear ideographic designation discussed below.

The text formatting provides an essential clue to the cultural and economic context of the account. W 23999,1 does not visibly associate the three $ŠA_3$.TUR with any particular adult, for example, any mother. This practice, that apparently cuts through maternal and paternal links (if indeed it represents humans rather than animals), could be explained in the context of the commoditization of humans within a slave trade: human family groupings are ignored and (presumably economic) value is attached to individuals based upon their gender and status as either adults or children. Alternately it could indicate that the purpose of the text was to aid the scribe in evaluating grain

expenditure needs for personnel fed at standard rates determined by the abovementioned gender and age characteristics—although grain notations themselves are not included in this text. The colophon of the text reads:

EN_a $EZEN_b$ AN HI URI_{3a} ZATU 774

The same colophon designation, with an additional ZATU 737 x SAL instead of ZATU 774, appears on the textile account W 21671. The sign $EZEN_{a/b}$ is used in a number of account colophons, and may refer, like in later Sumerian, to 'festivals' (Englund 1998: 127) or similar events that could have involved resource exchange or redistribution. While the meaning of the combination is not well understood, the relationship with the city Ur (URI_{3a}) can be noted. The 'festival'—or perhaps relatedly, a month name(?)—mentioned in the colophon of these two texts may therefore be characterized as involving scribal reckoning of named adult and child slaves (W 23999,1), and textiles perhaps made in the household ZATU 737 x SAL (W 21671).

Female millers and their children?

In contrast to W 23999,1 which lists only KUR_a/SAL 'men and women' and $ŠA_3$ KUR_a/SAL 'boys and girls', unprovenanced text CUSAS 31, 27 (fig. 8.4g) may record female millers (UR_5 SAL) of three categories ([…], AMA, and GI), as well as male and female children of two categories KUR_a TUR/ SAL TUR and $ŠA_{3a2}$ SAL/ $ŠA_{3a2}$ KUR_a. All of these categories are summarized under the designation SAL.KUR_a on the reverse. As with W 23999,1, for each of the counted individuals in this text, there is a corresponding sub-case that might record a personal name (Englund 2009, 2011). The text shows that, similarly to third millennium cuneiform administrative practice, gendered $ŠA_3$ can represent an age category distinct from gendered TUR.

This text may record 37 female ‘millers’ and 11 children. The whole group is totalled together under the designation 48 SAL.KUR$_a$. The inclusion of children may indicate that, as in later periods, children were listed because they were also provided with rations. However, like W 23999,1 above this text appears to be a list of named personnel, and not a rationing text (no capacity measures are included). The number of ‘children’ is less than a quarter of the number of adult females. Although all individuals seem to be ‘named’, the children are again not associated with any particular individuals listed among the UR$_5$ SAL, but instead recorded separately by age and sex. This text therefore displays a similar lack of concern for ‘family units’ to W 23999,1 above.

‘Children’ in the SAG x MA accounts

The most important ‘personnel’ documents are three related accounts from Jemdet Nasr, MSVO 1, 212–214 (fig. 5.12/ 8.4i–k). The two primary documents MSVO 1, 213–214 were compiled into MSVO 212. The texts use SAL.KUR$_a$, SAL, KUR$_a$, and occasionally TUR, and therefore belong to the ‘scheme 1’ group; however, they do not use ŠA$_3$. Their uses of KUR$_a$ separate from and in opposition to SAL are rare and ambiguous. The text also includes ambiguous uses of the designation AL in a few entries, which belongs to the scheme 2 sign-set for ‘adults’—however, it may be used differently in these Jemdet Nasr texts, as part of household designations.

The three related accounts from Jemdet Nasr (fig. 8.4i–k) provide the most visually explicit evidence for the cuneiform administration of captives who may have been put to labour, since the text categorises humans under the categories SAG x MA and ERIM$_a$ (see also pages 118–21). They count humans in the sexagesimal system, and share with W 23999,1 of scheme 1, as well as with the large accounts MS 3035 and

MRAH O.4995 of scheme 2 (discussed below), the format in which individuals (in this case, KUR_a, SAL, SAL.KUR_a, or TUR) are provided with sub-cases that might record 'personal names' (Englund 2009, 2011) (but see comments on page 120 regarding problems with the Jemdet Nasr 'naming cases').

The individuals in this text are summarised under the label SAL.KUR_a SAG x MA and SAL.KUR_a $ERIM_a$, and these summary designations appears to incorporate the few TUR recorded in the main text. Approximately six children occur in these accounts (some areas are broken), along with twenty-four adults. The TUR are variously marked for 'gender' as well as (by hypothesis) household or productive unit attachment in the main cases, in the form of:

- PAP_a SAL TUR NI_a AL (MSVO 1, 213 r. 2a)
- SAL AL TUR (MSVO 1, 212 obv. 9a)
- SAL.KUR_a TUR MEN_a $NUNUZ_{a1}$ (MSVO 1, 214 obv. 2a)

In addition, some of the TUR appear to be unmarked for gender in the summary account, designated (twice) as only:

- TUR MEN_a $NUNUZ_{a1}$ (212 rev. 2a and 7a / 213 rev. 8a)

Entries with TUR are twice counted with 2 (rather than 1) N_1 or two N_2. By comparison only one entry with 'adults' 213 rev. 1a $2N_1$ SAL.KUR_a SAG x MA NI_a AL is also counted with $2N_1$, and the remainder of the 24 adults are counted 1 per case. That is, the 'children' in these texts are more frequently recorded in 'pairs'.

There are two problems that can be mentioned in relation to the $2N_1$ TUR MEN_a $NUNUZ_{a1}$ in MSVO 1, 213 rev. 8a. Firstly, although *two* N_1 are recorded, only *one* subcase, with the designation E_2 DAH, is provided. This may suggest that rather than a personal name, this subcase is recording a household affiliation, worker category, or

other person classifier. This same designation, E_2 DAH applies to (one of?) the two SAL.KUR$_a$ TUR MEN$_a$ NUNUZ$_{a1}$ in text MSVO 1, 214 2a, and to the SAL adult following in 3a—perhaps suggesting that the woman in 3a will remain attached to these two 'children' in work placement. The meaning of E_2 DAH can only be guessed at: later Sumerian dah means 'extra, additional', and a tentative (unconfirmed) understanding of this may be as an administrative unit (E_2) of superfluous individuals including children and some women.

The second notable feature is that the 2N_1 individuals in text MSVO 1, 213 are transferred onto the summary account (MSVO 1, 212) with a change in status, since they are counted there instead as 2N_2 (N_2 = N_1 with a vertical stroke added). Individuals with N_2 may be considered specially 'marked out' for unclear purpose (Hawkins 2015). Both of these observations highlight that further research on the subcases is needed to understand these accounts.

Texts of scheme 2: age (but not sex) designations

In the accounts of scheme 2, age but not gender is indicated, and age is broken down into 'mature' (AL = maḫ$_2$?), EN.TUR (adolescent?), and 'year 1–3' (U_4 +1–3N_{57}). These texts seem to count personnel in contexts where gender is not a relevant defining factor, whether this is because it is assumed, or was irrelevant to the administrative roles of the personnel. In addition, the unprovenanced scheme 2 accounts (fig. 8.6[2]) include larger numbers of 'children' proportionally to 'adults' than do the scheme 1 accounts, which may be key to their interpretation: MRAH O.4995 has 36 adults and 38 'children' when combining the EN.TUR and U_4 + 1–3N_{57}; and MS 3035 has 43 adults and 46 'children'. For example, MS 3035 may record eighty-five personnel, 43

of whom are classified as AL adults, and 42 as immature, of four different age groups (EN.TUR and 1–3 'year olds'); while the Jemdet Nasr SAG x MA accounts record dozens of adults and perhaps only six children. The almost equal number of adults and immature humans or animals in the two largest scheme 2 accounts, could however, in theory still represent a 'captive-taking' situation similar to that of the SAG x MA accounts.

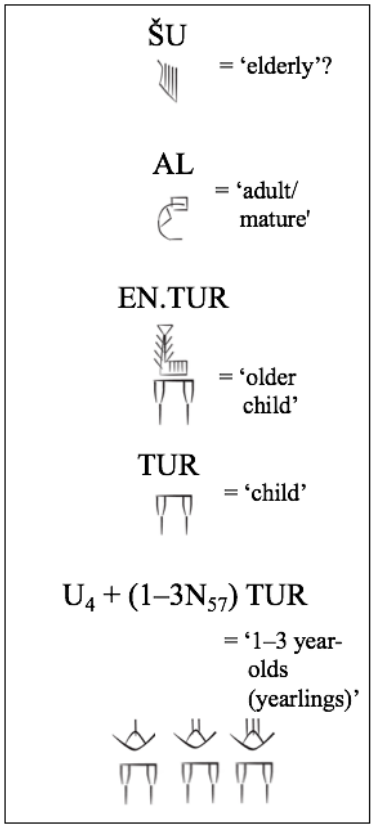


Figure 8.5: Scheme 2 age designations in proto-cuneiform

It is difficult to be certain that this set of terminology, which shares many features with livestock age categorisation, doesn't in fact record animals (below page 390–94). The arguments against this are that the number of subcases in the large texts match the number of individuals counted, which Englund (2009) has interpreted as evidence that the subcases represent personal names. However, there may be different interpretations of the information provided in these subcases. A second argument that the texts might record humans is that the sign combination EN.TUR is used in other texts in contexts referencing 'subordinate staff' (Johnson 2015) who appear as personnel of officials known from the lexical list

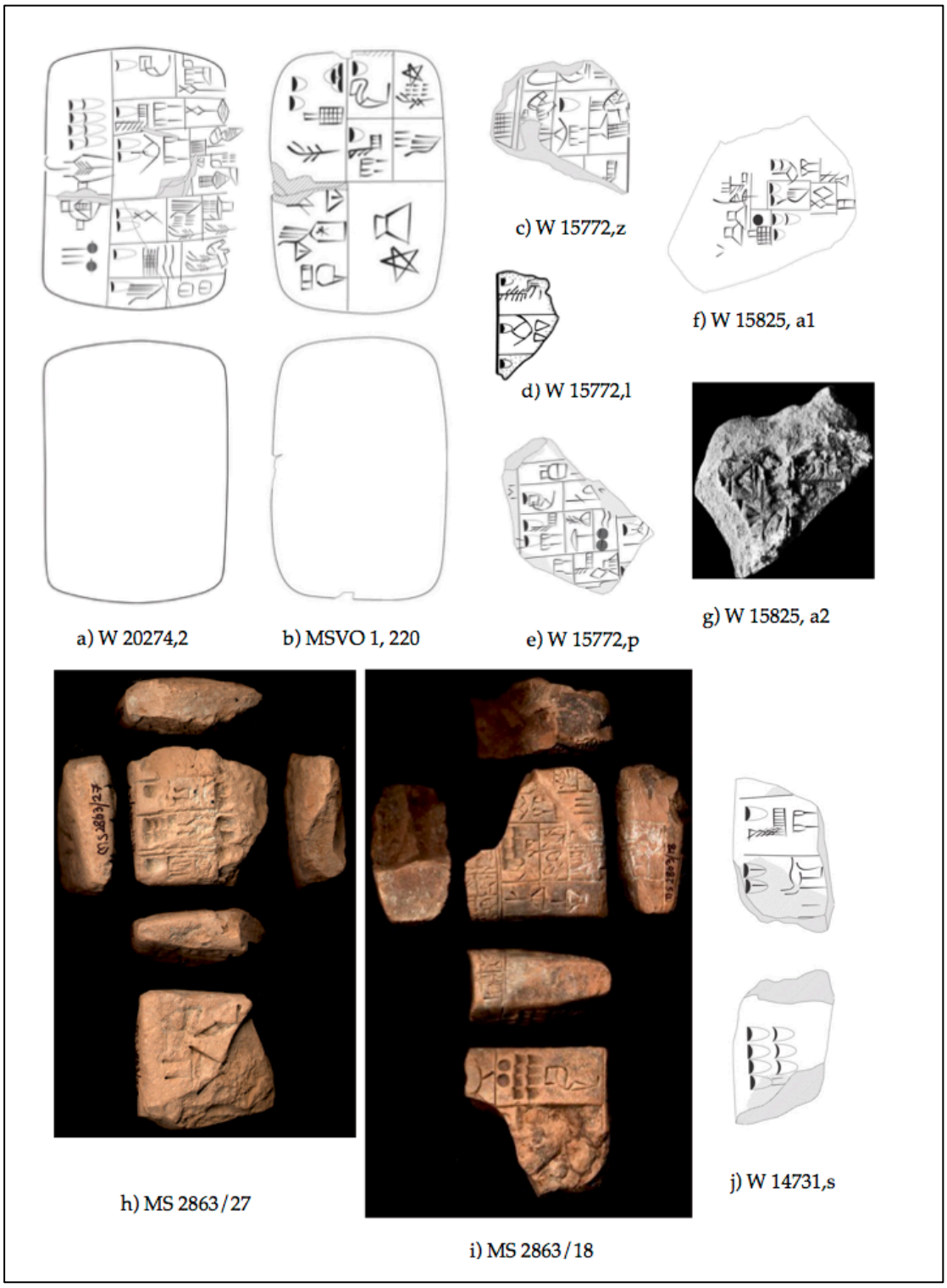
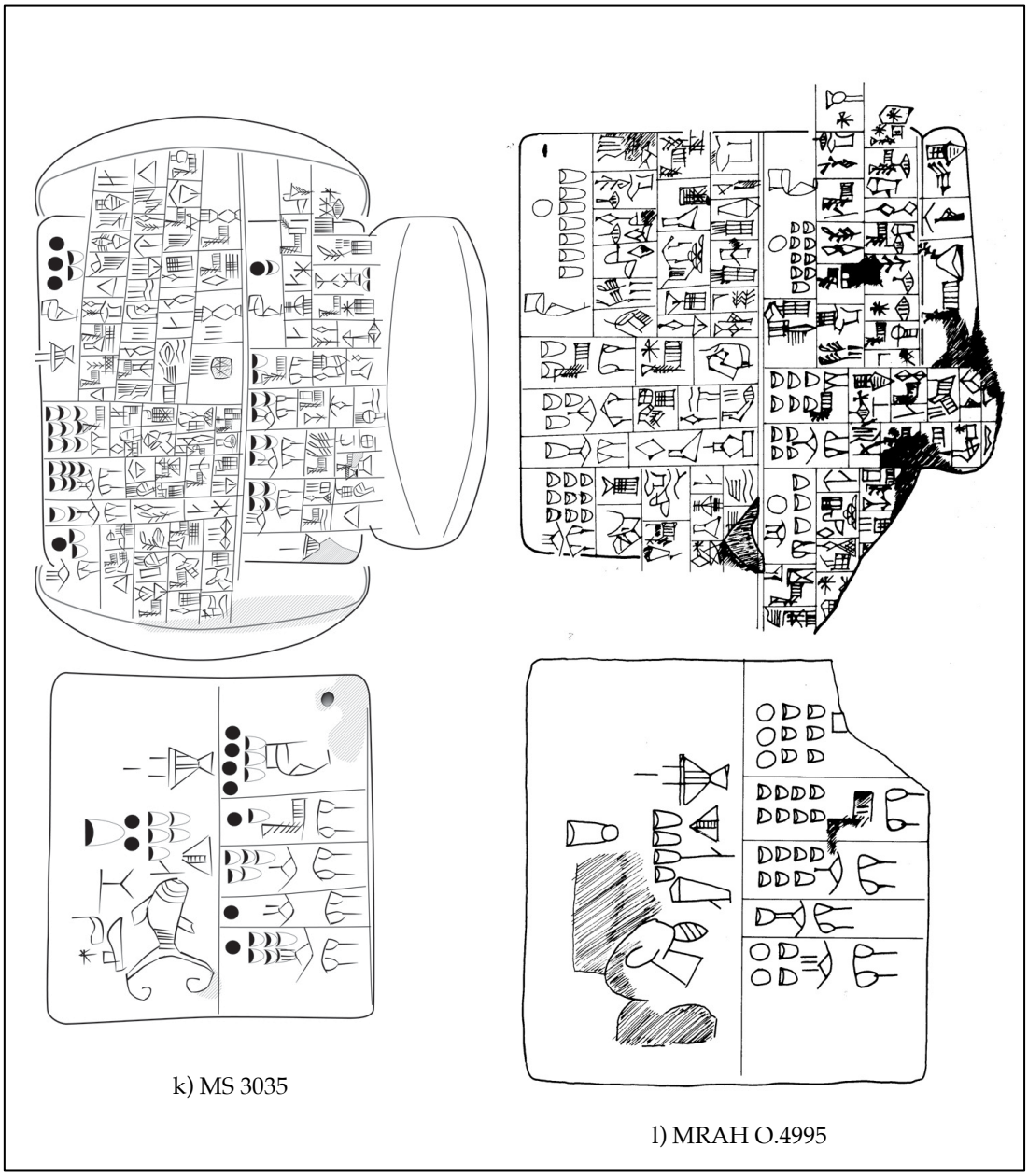


Figure 8.6(1): Texts of scheme 2. Noting the similar excavation numbers of Uruk texts c-e and f-g, those fragments may have belonged to two original accounts (W 15772 and W 15825).



k) MS 3035

l) MRAH O.4995

Figure 8.6(2): Texts of scheme 2. These two accounts of unknown origin provide the most complete information on the scheme 2 terminology, but many questions remain about the content.

Officials. The meaning of EN.TUR along with 'yearling' designations in scheme 2 texts is however less clear, and may or may not be related to the 'subordinate staff' designation.

The use of the sign AL was presumed by Englund (1998, 2009) to stand for 'adult workers' a meaning which he speculates may derive from the sign's graphical referent, a hoe. As a proto-cuneiform age category, the sign AL may be related to its later reading mah_2, a Sumerian term for grown animals[202]. In the scheme 2 texts, EN.TUR may represent an age category 'older' than 3 years but younger than AL adults[203], judging by the ordering of cases.

Text	AL	EN.TUR	TUR	U_4 + (1–3N_{57}) TUR	ŠU?	
W 14731,s		X				
W 15772,l		X		X		
W 15772,p	X	X				
W 15772,z	X			X		
W 15825,a1				X	X	***SAL SU_a**
W 15825,a2		X				
W 20274,2		X	X	X	X	
W 20573, 3 ?				X		
MSVO 1, 220	X	X				
MS 3035	X	X		X		
MS 2863/27	X			X		
MRAH O.4995	X	X		X		
MS 2863/18	X			X		

Figure 8.7: Scheme 2 terminology groups humans(?) by what are probably age categories but (with a possible exception in W 15825,a1) without including indication of gender in the form of KUR_a or SAL

[202] Other terms for 'adults' have been proposed for proto-cuneiform: '…we have to consider GAL_a in ED LU_2 A as expressing the same idea as LU_2 in other Early Dynastic lists and that is serves as a general indicator for an adult and professional worker or 'the one who…' or 'the one of…'' (Krispijn 2016: 3) / citing Green and Nissen 1987: 207 no. 188. Krispijn also takes AB for later ab-ba 'old man, senior' (2016: 3).

[203] Bartash offerred the reading uru_{16}-n 'meaning 'strong' i.e. 'developed child'' (2015: 135), but this seems difficult to provide evidence for.

U_4 + 1–3N_{57} TUR

Translated here as 'yearlings', the individuals indicated by the sign U_4 + 1–3N_{57} TUR, represent a pattern that is very similar to livestock designations for young animals. Animals in their first three years are routinely distinguished in livestock texts of later cuneiform, since this is significant information in relation to herd management. Within the context of cattle accounts, the ages one, two and three are particularly important in order to choose the appropriate age at which to start breeding a heifer (Englund 1995). However, 'yearling' children in the form of clearly distinguished one, two, or three year olds are not known from later cuneiform administrative texts, and the significance of U_4 +1–3N_{57} TUR in proto-cuneiform requires careful consideration. Would human resource management in the late fourth millennium include tracking human children in their first three years, and to what purpose? According to Englund's analysis, the early years of humans are distinguished in order to keep track of the human resources until they reach an age at which they can begin to work. Fragment W 15825, a1 (fig. 8.6 f) may show two 'one-year-old's next to what may be two elderly persons represented by ŠU, which would support the idea that the scribes were recording humans with diminished working potential for labour and/or redistributive planning. Unfortunately, the text is fragmentary and almost entirely incomprehensible. The U_4 designations are also known in one possibly scheme-1 related text with SAL women (CUSAS 31, 19, fig. 8.11d).

MS 3035 and MRAH O.4995 (large unprovenanced accounts)

The account is visibly divided in two separate counts of the entire series AL through 'yearlings' by a double line (dividing column 1 and column 2), before being totaled together on the reverse. The summary on the reverse is labelled with the combination

$1N_{57}$ $2N_{57}$ MUN as well as the designation SU_a PAP_a $1N_{58}$.BAD_a SI AN AD_a GIR_a, which remains undeciphered. The entries with TUR in this account are not gendered themselves nor are they associated with visibly distinguished females (SAL) or males (KUR_a). This brings into question its administrative context. Englund connects the text to labour administration by his interpretation of AL as a representing an (adult) field-worker by association with what may have initially been a representation of a hoe (2009: 13). On the other hand, the (perhaps derived) general reading **maḫ**$_2$, or 'mature', known later as a designation of mature livestock in contrast with TUR, may be possible here with no particular type of labour connotation[204].

Taking a prosopographic approach, we see that the names of individuals categorised as EN.TUR in this MUN account also occur elsewhere in the archaic corpus[205]. For example, BU_a+ DU_{6a} GUL appears in at least five other accounts, including the other large scheme 2 text, MRAH O.4995, where it is the name of an U_4+$3N_{57}$ TUR (3 year-old?). In the possible 'slave sale' document (MSVO 4, 58 fig. 5.13), which parallels the naming-case format of MS 3035, the combination BU_a+ DU_{6a} GUL occurs as a subcase categorised as one of two things assigned to AN MAR in a sexagesimal account labelled EN TE; AN MAR is a combination also known, for example, in a case above an EN.TUR in the personnel account W 14777,c discussed below (page 389 ff.). Another BU_a+ DU_{6a} GUL appears on the summary of a short grain accounting receipt (MSVO 1, 34) with a very large grain notation (approximately 14,610 litres of barley and

[204] See the comments by Englund 2009: 19–20 fn.19 suggesting a rebus between unknown languages to explain the sign's different historic associations.
[205] The ability to search in the CDLI electronic database for comparable uses of signs has dramatically changed the nature of investigation into archaic texts.

emmer[206]) from Jemdet Nasr, and may in that case be proposed to represent the personal name or title of a possibly elite administrative professional.

However, some of the signs used in MS 3035 are unexpected for 'naming' cases. ZATU 659  has been understood by Friberg (1999) as relating to calculation for man-days of labour, but appear in MS 3035 as the 'names' of three separate AL as do two different U_4+3N_{57} TUR (3-year-olds?). Could ZATU 659 here be a personal name common to five different individuals? Whatever its meaning, the cases it is recorded in are certainly included in the numerical summaries of each section, showing that it is a category of thing 'in parallel' to the other cases. Another of the proposed 'names', DIM, is repeated frequently in the naming cases as well.

Another unprovenanced text, MRAH O.4995 (formerly, "Talon 1") reproduces precisely the format of MS 3035. It is likewise labelled MUN, and shares part of the ideographic summary line, the sign combination PAP_a SU_a, which Englund (2009: 15 n. 43) proposed in reference to MS 3035, may represent a general worker category such as 'slaves' (note also, very speculatively, a possible comparison with Steinkeller's [1990] identification of LU_2.SU.A in much later third millennium texts as the Zagros dwellers then known as the 'Šimaškians'). As with MS 3035 above, in MRAH O.4995 two separate accounts on the obverse are summarized together on the reverse. The text records altogether 64 (=1N_{34} 4N_1) individuals, 36 of which are AL, 8 EN.TUR, 7 'one-year olds', 1 'two-year-old', and four 'three-year-olds'. This retains very roughly the

[206] Emmer may be represented by the modified numeral N_{46}.

same ratio of adults (AL) to the younger categories as MS 3035, that is, almost equal numbers of adults to the different categories of immature 'humans'.

Interpretting these texts as records of adult workers (AL) along with young and older children is reasonable, but it may not be the only possibility. For one, the unusual naming practice described above suggests that the 'naming cases' require through study with cross-corpus comparison of similar sign combinations that might help confirm or deny their use as personnel names. Secondly, use of MUN and the concern for 'yearlings' are both familiar in livestock accounts, and while it is reasonable to assume overlap in administrative practices for livestock and humans (as is known in manifold ways in later third millennium cuneiform), the possibility that the texts record animals is not totally excluded. Interpretation of the texts as accounts of humans of various age groups is the 'safest' option in light of tablet format and other third millennium cuneiform sign use—but it is not the only option.

Other scheme 2 texts

W 20274,2, (fig. 8.6 a) is a single-sided account from Uruk presenting a format and sign set that appear in larger MS 3035 and MRAH O.4995. This text is important for offering a more securely excavated example of the categories in the accounts described above. These signs in W 20274, 2 are U_4+1N_{57} (a 'one year old child'); EN TUR (older child?); and AL (adult). This text adds three more 'categories' apparently counted in parallel to those: BU, U_2-A and ŠU. Only the last of these, ŠU possibly for šu-gi ('old') offers an easy 'age category' translation. The colophon of the text is BAR ŠAM$_2$ EZEN$_a$xSU$_a$ 3N_{57}.NUNUZ$_{a1}$, which includes the signs that by later cuneiform parallel would indicate 'sale/price', 'lapis lazuli', and 'Su$_a$? festival'. The

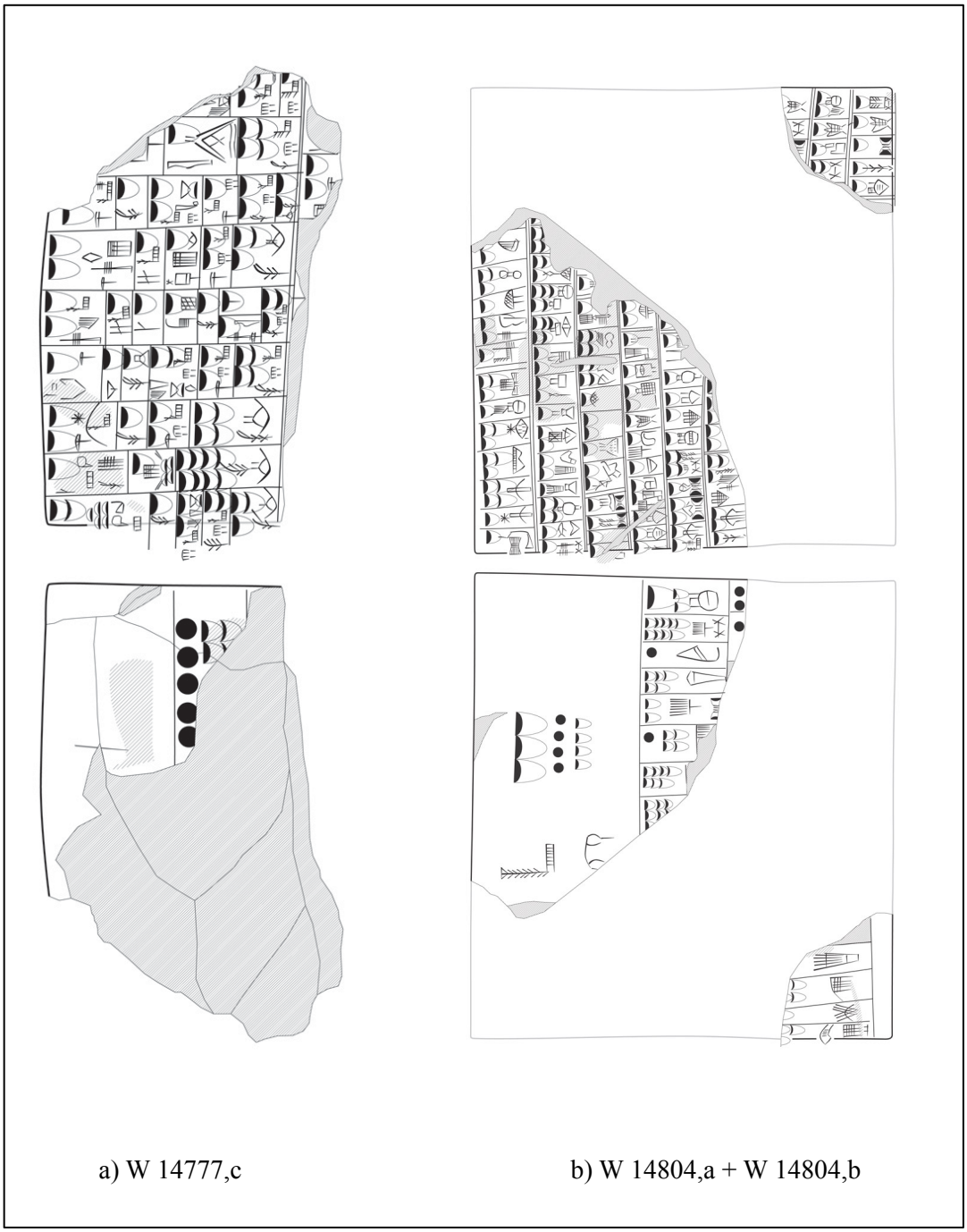
proto-cuneiform meaning of $ŠAM_2$ (later Sum. ‘price’) is uncertain. The presence of $EZEN_a$ in this colophon can also be compared with $EZEN_b$ in the account W 23999,1 of scheme 1 discussed above, recording $SAL.KUR_a$ and their infants by name. The social contexts for the economic transactions recorded in proto-cuneiform texts have not been explicitly discussed, and it may be that EZEN (later, ‘festival’) were events that involved the exchange or expenditure of livestock, as well as perhaps the exchange of slaves and/or other personnel.

MSVO 1, 220 from Jemdet Nasr contrasts a ‘named’ EN.TUR with a ‘named’ AL and is therefore the only ‘scheme 2’ text from Jemdet Nasr. The colophon of the text suggests the counted AL and EN.TUR might here be categorised as KUR_a DUB_a GI (for KUR_a DUB_a together in other simple receipts W 9579,o, fig. 5.5a; W 9579,cf, fig. 5.3a; W 9656,o).

The meaning of EN.TUR

The term EN alone is known to designate a powerful individual from early southern Mesopotamia. Although frequently attested in proto-cuneiform administrative documents, it is difficult to define the role of this individual in society, although some titles for priests are known from proto-cuneiform (comprehensible because of their survival into later cuneiform) and confirm that EN was sometimes associated with priestly designations in proto-cuneiform (Johnson 2015: 177–8). By the Early Dynastic periods the EN is understood to be something like a ‘city ruler’ with some association to a temple household.

But what could EN.TUR mean in proto-cuneiform? It is not clear that the different uses of the sign combination EN.TUR across the proto-cuneiform corpus carry the same meaning. An EN.TUR occurs already in a short account of the Uruk IV period (W 9579,ce) that uses the numerical system EN, a system with unknown purpose and which doesn't occur after the Uruk IV period. In other texts outside of those belonging to scheme 2—that is, without the presence of other identifiable age categories—the term is used to label what Johnson has interpreted as 'subordinate staff' (Johnson 2015). Johnson (2015: 174) demonstrated that the subordinate staff lists 'were used to either organize or audit the distribution of cuts of meat and fish to mid-level elites at the end of the Late Uruk period'. For example, EN.TUR appears as a summary designation in the staff list W 14804,a + W 14804,b (fig. 8.8b) where personnel, many of whose titles are known from the lexical *Officials*, are assigned 'groups' of unnamed EN.TUR, with the total summarizing all 224 of the EN.TUR.



a) W 14777,c

b) W 14804,a + W 14804,b

Figure 8.8 EN.TUR 'subordinate staff' texts with unclear relationship to scheme 2 age designations

The category EN.TUR, 'subordinate staff", is not found as a particular title in the proto-cuneiform lexical *Officials* witnesses themselves (although that list is only fragmentarily preserved), and may not be expected, since the category may refer more generally to the subordinate personnel of those who had titles. The Early Dynastic version of *Officials* (see Fara text VAT 12425) includes two entries that could

potentially be related to the administrative designation EN TUR: en tur $ŠE_3$ ($=KAR_x$)[207] and en tur AN-$ŠE_3$ ($=KAR_x$), which are in turn referenced in an Old Babylonian source from Nippur (CBS 02243 + CBS 11072 + N 3093) with the writing [en] tur-ra an-kar_2 perhaps a title referencing a small 'enkara' or 'sibir'-staff (Sjöberg 1973). However, there is no strong evidence for a connection between a proto-cuneiform EN TUR 'subordinate staff' and an Early Dynastic and following en tur $ŠE_3$.

The term en tur does not occur in the administrative Early Dynastic I–II texts from Ur, nor in later administrative texts of the third millennium. But much later, Gilgamesh is referred to as **en tur** in *Gilgamesh and the Bull of Heaven* (ETCSL 1.08.01.2 / P469668, composite line 4) and *Gilgamesh and Huwawa A* (ETCSL 1.08.01.5 / P480190 composite lines 77 and 167); George (2003: 103 n. 50) translates this title as 'young lord' and notes that the reading **tur** (rather than $banda_3$) is assured by the title's spelling in one text as **en.tur.re**. It is difficult to prove a link between this title and the proto-cuneiform administrative term EN.TUR, but it remains possible that Old Babylonian scribes were drawing on themes from the Gilgamesh narratives (especially a contrast between the assembly of the elders versus the 'young men') to interpret the echoes of Late Uruk administrative terminology that had been passed down in lexical compositions, or more generally through 'bicameral orthographic' traditions relating to elite rationing practices (Johnson 2015). The meaning of EN.TUR in proto-cuneiform will probably only be clarified through examining the proto-cuneiform administrative texts themselves.

[207] This title may be administratively attested several times in proto-cuneiform, e.g. IM 134832.

Another enigmatic and fragmentary proto-cuneiform text (W 14777,c, figure 8.8 a) uses the combination EN.TUR thirteen times. This is a large account with multiple sub-cases and alternating BA and GI designations. While Bartash (2016: 136) understood this text as 'a cumulative account of individuals, adults and children, entering or leaving a central institution', the interpretation of BA and GI in verbal opposition (Bartash takes BA as bar, 'to release' and GI as ge-en 'to confirm') does not address the reality that in proto-cuneiform these designations can be summarised together. In fact, Johnson (2015: 190 ff.) showed that BA and GI are designations recorded with officials who are, in the UKKIN list and other documents, associated with the term $ŠITA_{a1}$ or UKKIN, and that W 14777,c represents 'mid-level' officials who appear in subcases (thus probably as subordinates to) officials known from lines 16–19 of the UKKIN list. Presenting some of the designations from this text next to those in a 'subordinate staff list' MSVO 1, 112, Johnson shows that the officials occur *in the same order* in both texts, confirming the connection between the administrative contexts of each text—this demonstrates remarkable administrative consistency, since these texts were excavated at different sites (W 14777,c at Uruk and MSVO 1, 112 at Jemdet Nasr)—and it also links $ŠITA_{a1}$ and UKKIN designations on the one hand with BA and GI designations on the other (though not observably one-for-one).

W 14777,c can therefore be associated with accounting practices that involved listing personnel who were subordinate to UKKIN-list officials, perhaps being marked as recipients of one kind of meat and fish cut or another (Johnson 2015). But if W 14777,c belongs to the 'subordinate staff lists' rather than the age-group scheme 2 texts, what are we then to make of a crucial link between W 14777,c and the age terminology, namely that as in texts such as MS 3035 and MRAH O.4995, the staff

list W 14777,c record EN.TUR followed by subcases with either U_4+1N_{57} or U_4+2N_{57} (cases 3' –7' and 9', fig. 8.8) that mimic the 'yearlings' of the scheme 2 texts? Could it be only coincidence that EN.TUR are here also associated with similar U_4 designations? In the *Officials*-related EN.TUR staff lists there may be other interpretations for U_4+1–2N_{57} than as human age categories[208]. A difference in terminology is that the 'year' designations in the staff lists are not accompanied by the sign TUR (similarly to the equid age designations discussed below). At present, it is therefore best to hypothesis that the scheme 2 texts with EN.TUR and subordinate staff lists with the same sign combination in fact represent different accounting contexts which might use EN.TUR and U_4 + 1–2N_{57} in different ways.

Equid accounts compared to scheme 1 and 2 accounts

Whatever the administratrive distinction may be between genderless EN.TUR and 'yearling' texts (scheme 2) and gendered adult and children texts (scheme 1), it does not appear to apply to animal accounts. The use of SAL and KUR_a along with both $ŠA_3$ *and* 'year' designations U_4+1–3N_{57}, that is, the mixing of a few defining features of schemes 1 and 2 for humans, is clear in several of the unprovenanced equid accounts. These texts have appeared on the antiquities market in recent years, and most have been published in CUSAS volumes 1, 21, and 31. CUSAS 1, text numbers 31–40 inclusive

[208] There is not space here to widely explore the possible meanings of 'year' designations in association with subordinate staff, but as a starting point it appears from text format and numerical notations that the 'year' designations identify counted personnel who are subordinate to EN.TUR. Several hypotheses could be put forth: they could refer to years or months of apprenticeship or service in a particular role. Or they could in some way reference the age at which an animal is slaughtered for 'elite' meat rations, to which these staff lists are known to be associated (the signs may indicate 'month' rather than 'year' for example if the context is lamb, since cuts from one-month olds are in some societies more valued than two or three-month old slaughters). Or perhaps the U_4 are in some way references to accounting periods. These latter two are less easy to explain in terms of a text format in which the U_4 designations appear counted in parallel to other staff. The U_4 time units themselves may indicate either cardinal or ordinal numbering (Englund 1988: 137). In short, clarifying these texts would require intense cross-examination with other proto-cuneiform sources.

are the clearest example of this text type. Unpublished texts MS 2863/9, 2963, 4494 are also representative accounts. Some of these are accounts of equids and possibly also sheep (Monaco 2007: 26, see also comments in Englund 2009: 11 n. 29), an interpretation based in part on the ideographic sign KIŠ (an equid) at the top of the account.

The texts provide evidence that $ŠA_3$ for equids represents an age category of immature animals distinguished from both 1–3 year olds and adults, as it does in later cuneiform for animals and humans. By modern livestock standards, donkeys are considered fully mature and able to breed between the ages of 3 and 5, which might in part explain an administrative practice that tracked 1–3 year olds (especially in contrast with $NINDA_2$, possibly 'breeding males', figure 8.10).

It remains difficult to distinguish human and animal accounts. The distinctions between the texts that are hypothesised here to record age and sex of equids, as opposed to humans of scheme 1 or 2, are:

1. an animal head sign (usually ANŠE, KIŠ, or AMAR) usually appears in the colophon or elsewhere in the text
2. examples identified so far that use 'yearling' designations are *not* combined with the sign TUR as in the scheme 2 accounts.
3. some texts with animal age designations use both $ŠA_3$ and U_4 'yearling' designations, which breaks down the distinction between schemes 1 and 2 human count schemes.

These are only tentative conclusions which may need to be modified with future evidence.

MUN in account colophons

The sign MUN appears in both MS 3035 and MRAH O.4995 of scheme 2 texts and in several of the equid accounts (fig. 8.9a and e–g; fig. 8.10). Could this call into question whether those scheme 2 texts in fact record humans instead of animals? Or is it an accounting context that is relevant to both herded animals and 'herded humans'? The sign is ZATU 368, which is named 'MUN' (Sum. 'salt') by Green and Nissen (1989: 247). Steinkeller (1995a: 703) questions the association between all forms of this sign provided by Green and Nissen with later cuneiform MUN, but he can offer no alternative reading.

Age hierarchies: scheme 2 vs. animal accounts

Another strong comparison between equid and scheme 2 accounts is the use of 'yearling' designations. According to the direction of writing, the adults in the scheme 2 texts are followed by the EN.TUR, then normally with the 1-year olds proceeding through the 2 and 3-year olds (see rev. MS 3035 in fig. 8.10). That is, from beginning to end, the text appears to list adults and older 'children', but then skips to the youngest (one-year-olds) proceeding up to the oldest (3-year-olds). In the equid texts with 'yearling' designations we generally see a reversal of this ordering with the adults followed by 'ŠA$_3$' (the scheme 1 human age category), then followed by the 3, 2, then 1-year olds in descending age order. It is difficult to devise explanations for these differences, which may relate to the process of compiling (hypothetical) primary accounts into larger ones in the case of the scheme 2 texts, or may simply reflect idiosyncratic accounting tradition. The interruption to the age order in MS 3035 column 1, with the sequence of 2-1-3 (see fig. 8.10) is similarly difficult to explain.

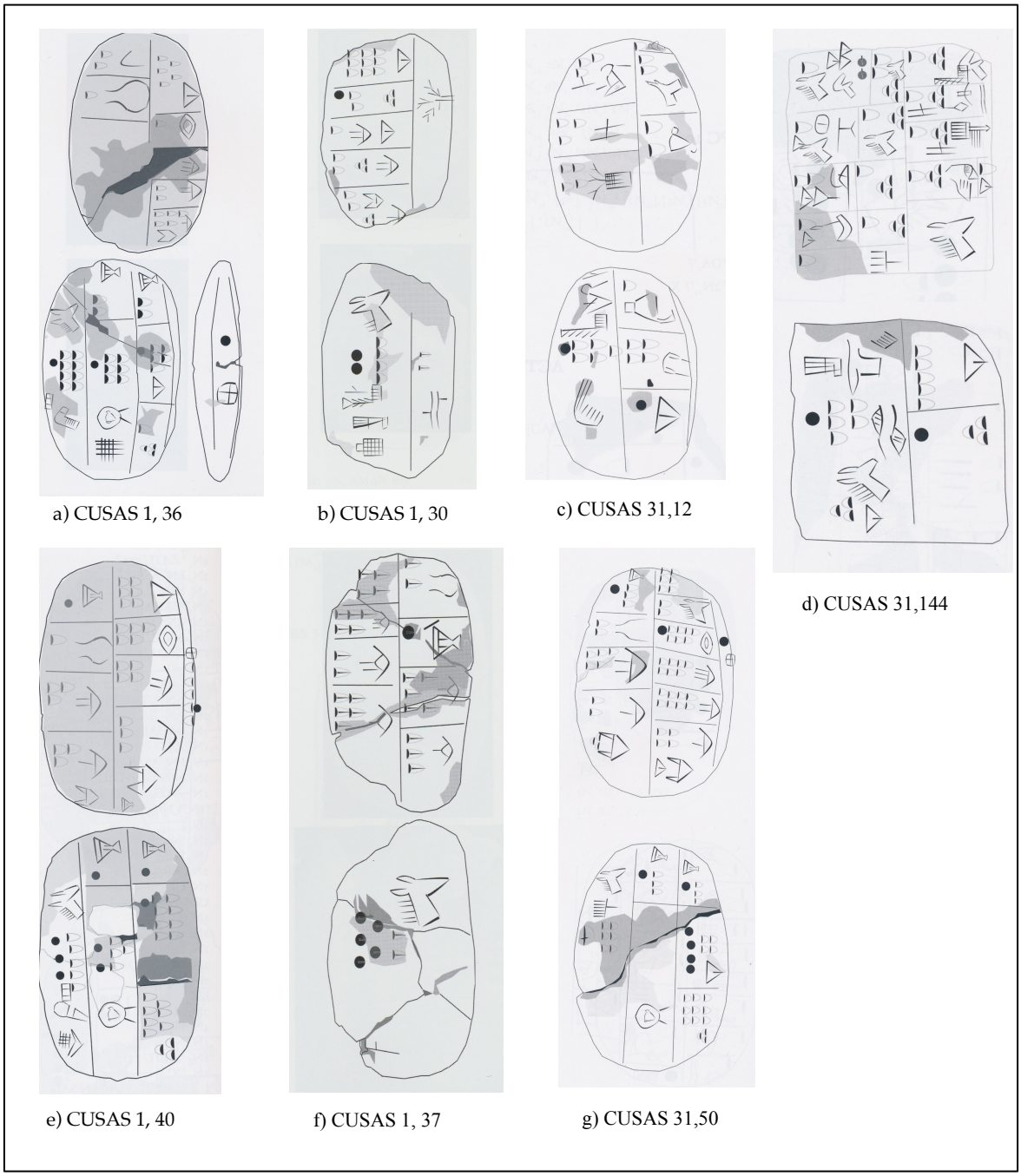


Figure 8.9: Small equid herding accounts. Age and gender terminologies for equids mix signs from both scheme 1 and 2 texts that may record humans.

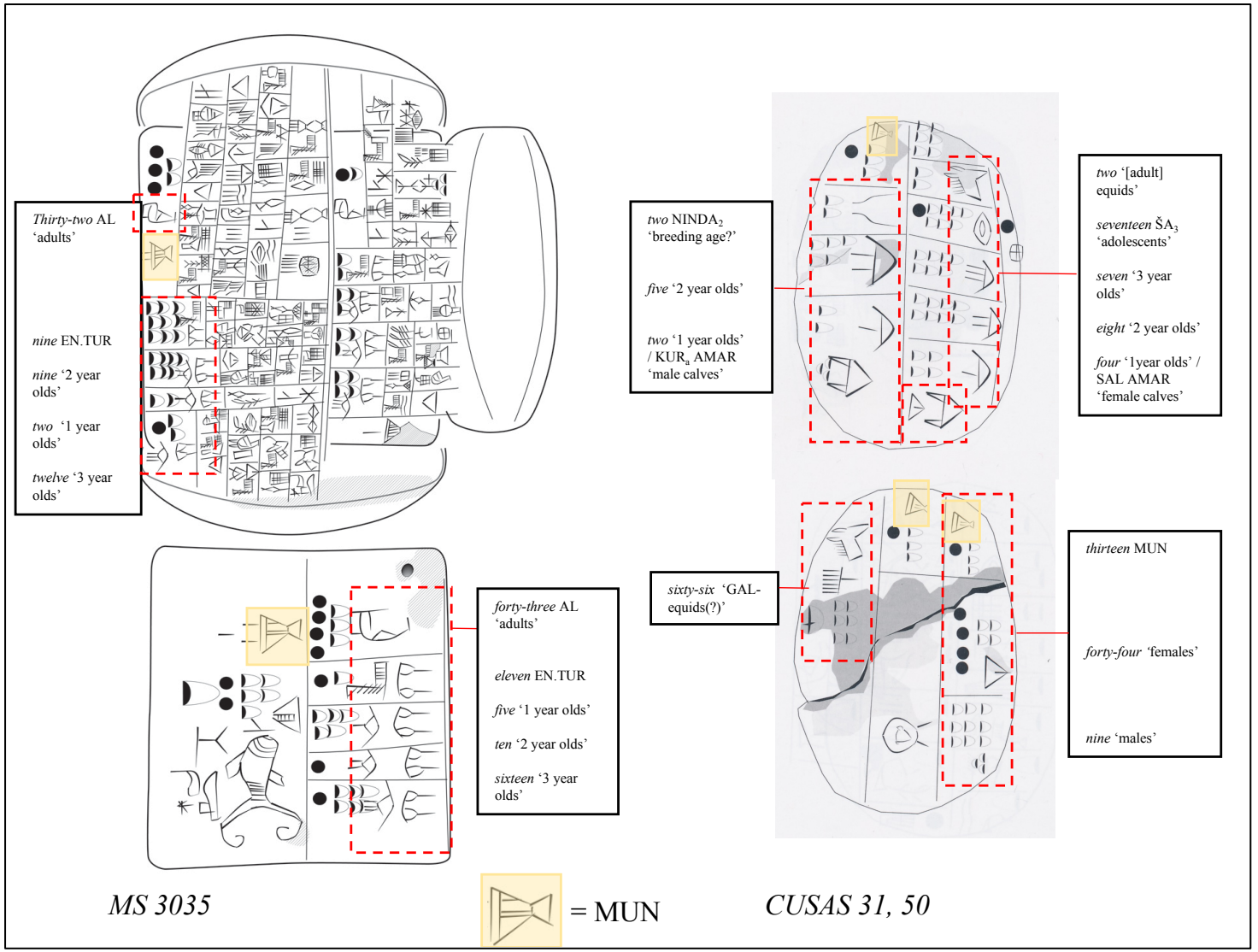


Figure 8.10 Age ordering comparison: a scheme 2 text (MS 3035) and an equid account (CUSAS 31, 50).

Other texts that may record children

A few texts are difficult to place in scheme 1 or 2, in part due to their fragmentary state. Uruk texts W 19408,54 (fig. 8.11b) and W 14777,e + W 14777,r1 (fig. 8.11c) may or may not record children. W 19408,54 is least convincing but is included here due to the 'count' of TUR in association with the designation MUN, which is discussed above as a sign featuring in the scheme 2 texts and the equid texts. W 14777,e + W 14777,r1 provides another example of possible AL adults as distinguished from TUR adolescents, as in scheme 2 texts—however, no EN.TUR or yearlings are recorded, and a reference on the poorly preserved obverse of the text to UDU KUR_a may suggest this is a livestock account. The unprovenanced text CUSAS 31, 19 (fig. 8.11d), presents three cases recording $1N_{57}$ TUR in association with $1N_1$ SAL, thereby mixing terms of scheme 1 (gender in the form of SAL) and scheme 2 (the 'yearling' designation in the form of $1N_{57}$ TUR). The counted 'yearlings' and SAL also appear to have associated sub-cases to the left that are comparable to the 'naming cases' in the accounts discussed by Englund (2009). One of the 'yearlings' is 'named' $3N_{57}$ NUNUZ ('lapis lazuli'), a designation also known from a 'naming case' of scheme 2 text MS 3035 where it belongs to one of twelve '3-year olds'.

Children's rations in proto-cuneiform?

The specifically age-related ration differentiation as discussed by Gelb for texts from the pre-Sargonic period onwards has not been recognized in the proto-cuneiform record, where no texts are yet identified with both known age designations and accompanying ration amounts; however, Vaiman (1990) suggested that in counts of workers, children could sometime be counted as 'half' a worker, citing the example of

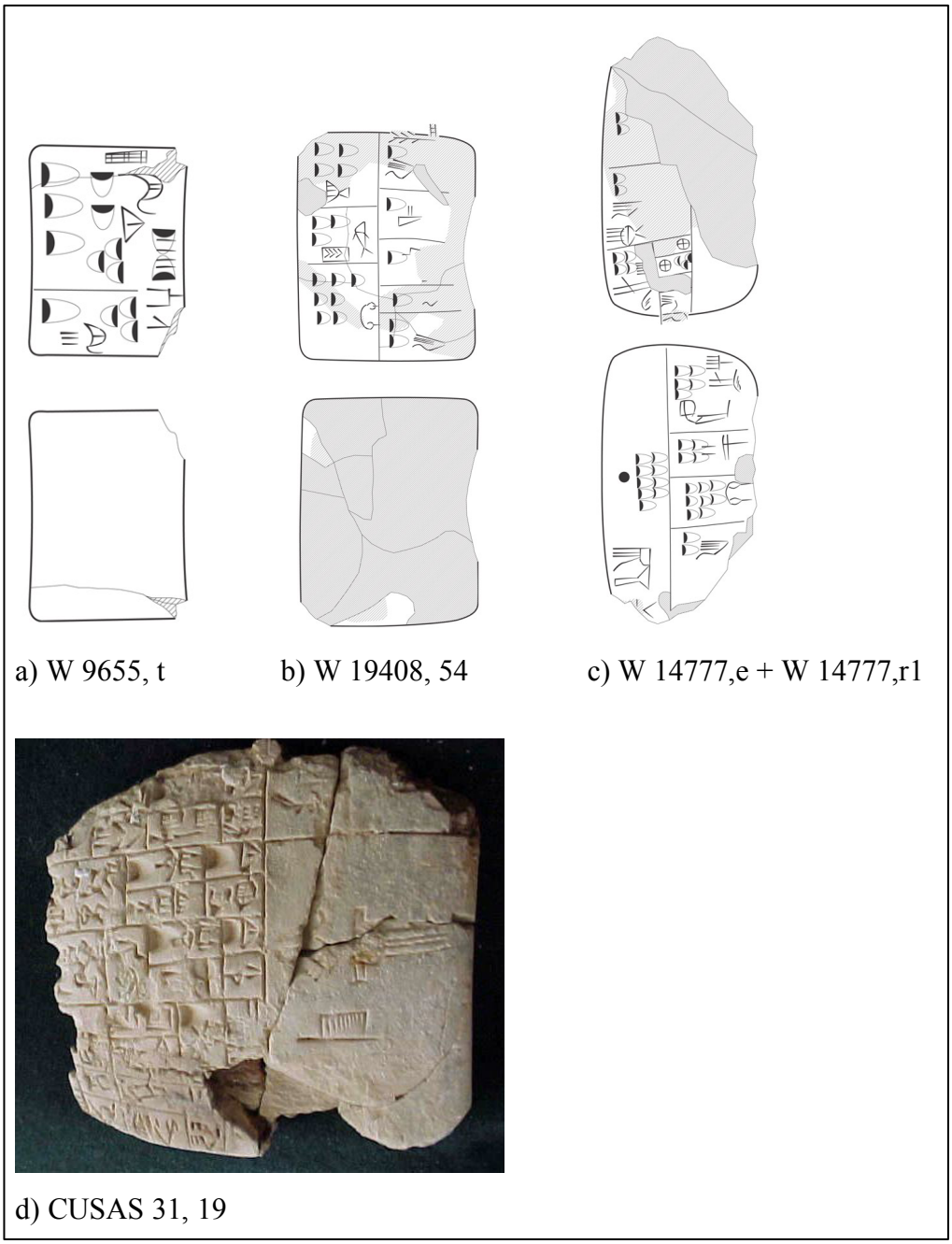


Figure 8.11: Texts that might record children, but which can be only loosely placed in the scheme 1 and 2 designations described above.

Uruk text W 9655,t (fig. 8.11a)[209]. This may be the case in some accounting contexts, but is clearly not so in all, since the majority of texts discussed above use one N_1 (as with adults) to count 'children' (such as W 23999,1 counting $ŠA_3$.TUR and MSVO 1, 212 counting TUR). One other text fragment, W 17729,dp (not included in scheme 1 texts above due to poor preservation and uncertain reading) may include an entry recording SAL TUR $2N_{57}$ (?) that also appears to be counted with N_8, although the accounting context is lost except for the following entry with the sign $SILA_{4b}$ ('lamb').

Summary

Through examining all the uses of TUR and other signs representing age categories, it can be established that very few texts—fewer than 30 texts, less than 1% of the known proto-cuneiform corpus—may record young humans. This helps to better characterise the demonstrable administrative priorities of proto-cuneiform scribes, and directly contradicts the statement of Asher-Greve (2008). That is, explicitly tracking workers along with their children was only a very marginal concern of the proto-cuneiform scribes, though the small-scale practice attested by a handful of proto-cuneiform examples was to be developed more fully across the third millennium.

Some of the proto-cuneiform texts that record children may include detail in the form of personal names that is not generally recorded in the rationing texts of later third millennium —for example, children are not usually listed by personal name in the še-ba $geme_2$-dumu ration lists of Pre-Sargonic Girsu (Maekawa: 1980b: 91). However, the hypothetical 'names' of the proto-cuneiform slaves or household personnel have

[209] A seemingly different practice in Ur III administrative texts is the recording of '1/2' workers that may reflect 'half time' labourers (e.g. Englund 1992: 90).

not yet been shown to reflect any particular linguistic group, and research into the sub-case designations could form a point of future study.

This chapter has shown that children might have been recorded in different administrative contexts, explaining the care in some texts to record $ŠA_3$ and TUR children of each gender (scheme 1), while in other texts distinguishing between four age categories but neglecting to record gender (scheme 2). The scheme 1 'gender and age' texts—particularly the three SAG x MA texts that include small numbers of children—appear most likley to represent small-scale slave or captive accounts. One account plus another fragment, both belonging to scheme 1 may be records of female millers (SAL UR_5) along with children; this is an administrative tradition that is known in later cuneiform, and may now, based upon these proto-cuneiform examples, be tentatively shown to have its roots in late fourth millennium accounting practices.

On the other hand, the EN.TUR and yearling texts (scheme 2) are less clearly related to labour contexts familiar in later cuneiform administrative genres through their proportionally larger numbers of children compared to adults, and their lack of explicitly identified females (and gender marking in general). The sign AL/MAH_2 (possibly a depiction of a hoe) is not sufficient on its own to link the texts to agricultural labour, since many signs in proto-cuneiform can be shown to have already developed meanings beyond their literal pictographic reference. Further examination of the meaning of MUN (and why it appears also in equid accounts) could help clarify the administrative context of some scheme 2 texts. A few features of scheme 2 texts also suggest a possible but unclear relationship to the *Officials*-derived staff lists including EN.TUR, where the term probably means 'subordinate

staff". It remains to be shown whether EN.TUR and the U_{4-} combinations in the staff lists and in the scheme 2 age texts are identical terms reflecting related administrative contexts.

Chapter 8b: Proto-Elamite evidence for children

The proto-Elamite sign M370$_b$ and its variants have long been thought derived from proto-cuneiform TUR (Meriggi 1969: 157–8). Apart from the graphical similarity, the use of signs that look like KUR$_a$ and SAL (proto-Elamite M388 and M72 respectively) in complex graphemes by being inscribed in the centre of M370$_b$, prove some kind of relationship to the cuneiform set used to indicate the sex and age of humans (scheme 1 chapter 8a) and animals. Two further complex graphemes in proto-Elamite, consisting of M370$_b$ with a sign resembling an asterisk (M46) or a single stroke (M386) in the centre, are not understood.

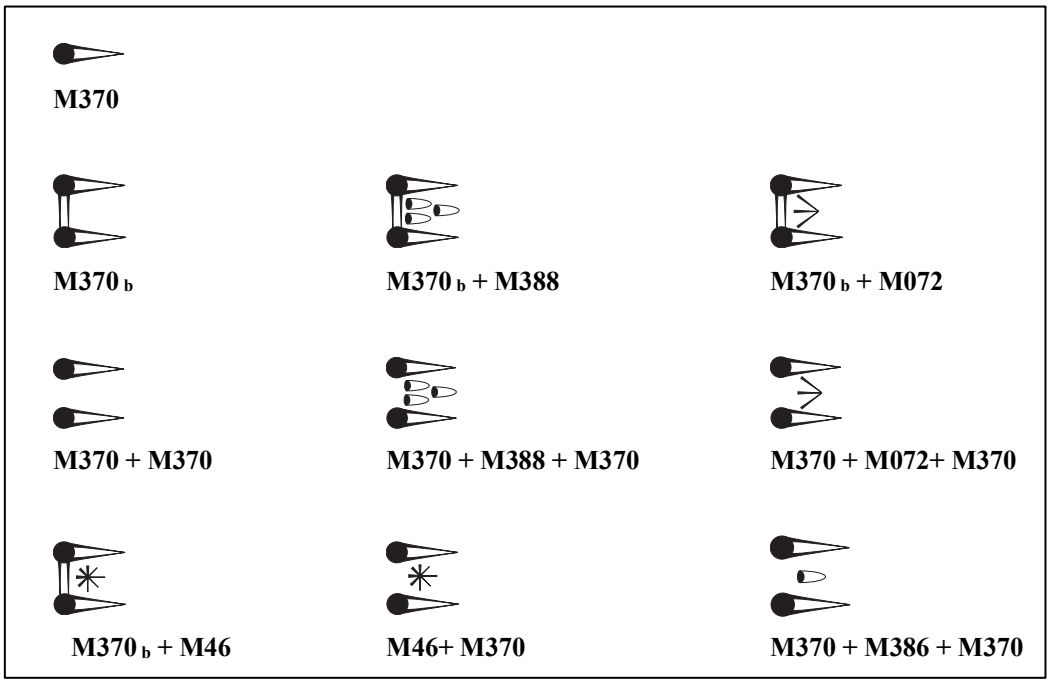


Figure 8.12: Proto-Elamite signs possibly indicating young humans

The form M370$_b$ (second from the top left, fig. 8.12) most closely resembles the early cuneiform sign TUR. Forms with two M370 physically unconnected, yet part of the same complex grapheme, also occur, with the signs mentioned above standing between them: M370+SIGN+M370. It is not yet clear whether the connected and unconnected

forms have different meanings; in any case it is often difficult to tell from poorly preserved texts which form is used. The proto-Elamite sign M370, made with a single stroke of the stylus (rather than two connected strokes of M370$_b$) has an unclear semantic connection to M370$_b$. This section first analyses the uses of M370 + SIGN + M370, and M370$_b$ which appear in comparable circumstances, and then addresses the 'single stroke' M370 of less certain meaning.

The sign M370$_b$ and variants do not occur in the small corpora from Tepe Yahya and Tal-i Malyan, nor in the handful of other sites which have produced small numbers of proto-Elamite texts, including the few published texts from Tepe Sofalin; therefore at present we only discuss the Susa material. Of over 1500 proto-Elamite texts published in various volumes, and transliterated on the cdli, M370$_b$ and/or M370+[x+]M370 occur in only 14 texts, all included in the dissertation appendix. Of these, around ten are large, but never fully preserved accounts (a few preserve approximately 180 entries) with an identifiable and repetitive text organization (Appendix: the 'Very long rations texts' and 'Fragments of long ration texts' / see also Dahl et al. 2018).

M370$_b$ and M370+SIGN+M370 in the very long rations texts

The complex graphemes in figure 8.11 are hypothesized to represent male and female 'children'. They appear in the three most complete very long rations texts, along with the fragments that belong to very similar texts[210]. These texts are divisible into 'teams' of decimally (?) counted workers with overseers (see also chapter 6b 'M388 in the very

[210] RT 1 MDP 6 246 +; RT 2 MDP 6 316; RT 3 MDP 17 292; fragmentary rations texts MDP 6 311, 315, 343, 5007; MDP 17 234; MDP 26S 333, 339; plus possibly related 'primary document' MDP 6, 287.

long rations texts' page 243). One of these, MDP 6, 246 + 269+ 302 + 332, consists of fragments joined in the Louvre museum by J. Dahl in 2012 (Dahl: CDLN 2012:006). The texts are not complete, but each of Ration texts 1–3 preserve over 100 entries. A loose comparison with later cuneiform $geme_2$-dumu texts has been indicated in this dissertation.

A variety of other 'worker categories' are counted in the texts, and 'women' and 'children' only make up some of the counted workers. Rations text 1 includes six M72 women and eleven female children, plus according to the summary, 21 other children for which the gender is unclear from the broken summary—at least six of which are male (M388) according to the body of the text. Rations Text 2 includes fifteen M72 women, four female children, eight male children and two 'M46' children; and Rations Text 3 only one M72 woman, four female children, four male children and one M46 child. The number of each basic worker category is presented in figure 8.13[211]. The large numbers of M388 and M124 listed there appear mostly in the complexly designated 'overseer' entries rather than within the teams—although M124 frequently appears within the teams as well.

Even among the three more fully preserved 'very long rations texts', the 'teams' of workers are rarely preserved in full, which makes it difficult to study the make-up of groups. Some of the better-preserved teams are presented in figure 8.14, and a few basic observations about the presence of children can be made:

- No 'team' consists of only M370-combination 'children', but they are spread across teams as are the other worker categories
- Not all the teams include children (e.g. RT 2 entries 106'–111').

[211] Also fig. 7.33 and discussion

- Children can appear after a number of different ‘worker category’ signs (including but not limited to M124, M46, and M373), and there is no particular tendency for the sign to follow immediately after an M72 ‘woman’.
- Children tend to be listed near the end of ‘teams’ which may reflect hierarchical ordering of ‘most-important first’.
- Children always come with no further designation in the same entry (a few possible exceptions such as in MDP 6, 324 may be drawing/transliteration errors).
- For each female, male, or M46 ‘child’, the count following is one, two or three but never more. Other worker categories similarly have a count of either one or (more rarely than with M370 CG’s) two or three per entry. The tendency to record ‘children’ more regularly in two’s than adults may recall the Jemdet Nasr SAG x MA texts.
- Counted M370+M72+M370 with no other qualification, can appear twice (that is, represented in separate entries) in *the same work team*. In Rations text 1, a sequences of entries may suggest that the first counts of four male children and one female child may ‘belong’ to the preceding, counted M371, while one more female child belongs to the counted M46 preceding it.
- A difficulty in interpretation is presented in RT 1, in which 1 M46 is followed first by 1 M370+M72+M370, and then by 1 $M370_b$ M72 with no intervening entries. This ordering suggests the two M370 complex graphemes may carry distinct meanings, however it could also be a scribal error or idiosyncratic accounting practice.
- Unfortunately, the evidence doesn’t make visible any possible ‘ration-level’ distinction (as would be expected following later regional redistributive practices) between adult and child worker categories.

Sign Name	Sign Form	Frequency in RT 1	Frequency in RT 2	Frequency in RT 3
$M3_b$		5	3	14
M32		0	0	2
M46		9	3	2
$M53_a$		5	1	0
M54		16	22	7
M72		6	15	1
M124		21	31	24
M370+M46+M370		1	2	1
M370+M72+M370		5	1	0
$M370+M373_a+M370$		0	0	1
M370+M388+M370		1	4	0
$M370_b+M72$		6	3	4
$M370_b+M388$		3	3	3
M371		3?	11	17
M373		8?	14	3
$M373_a$		0	0	8
M376		0	13	5
M388		1	10	20

Figure 8.13 : Some basic worker category signs in the Very long ration texts 1–3 (After Dahl et al. 2018)

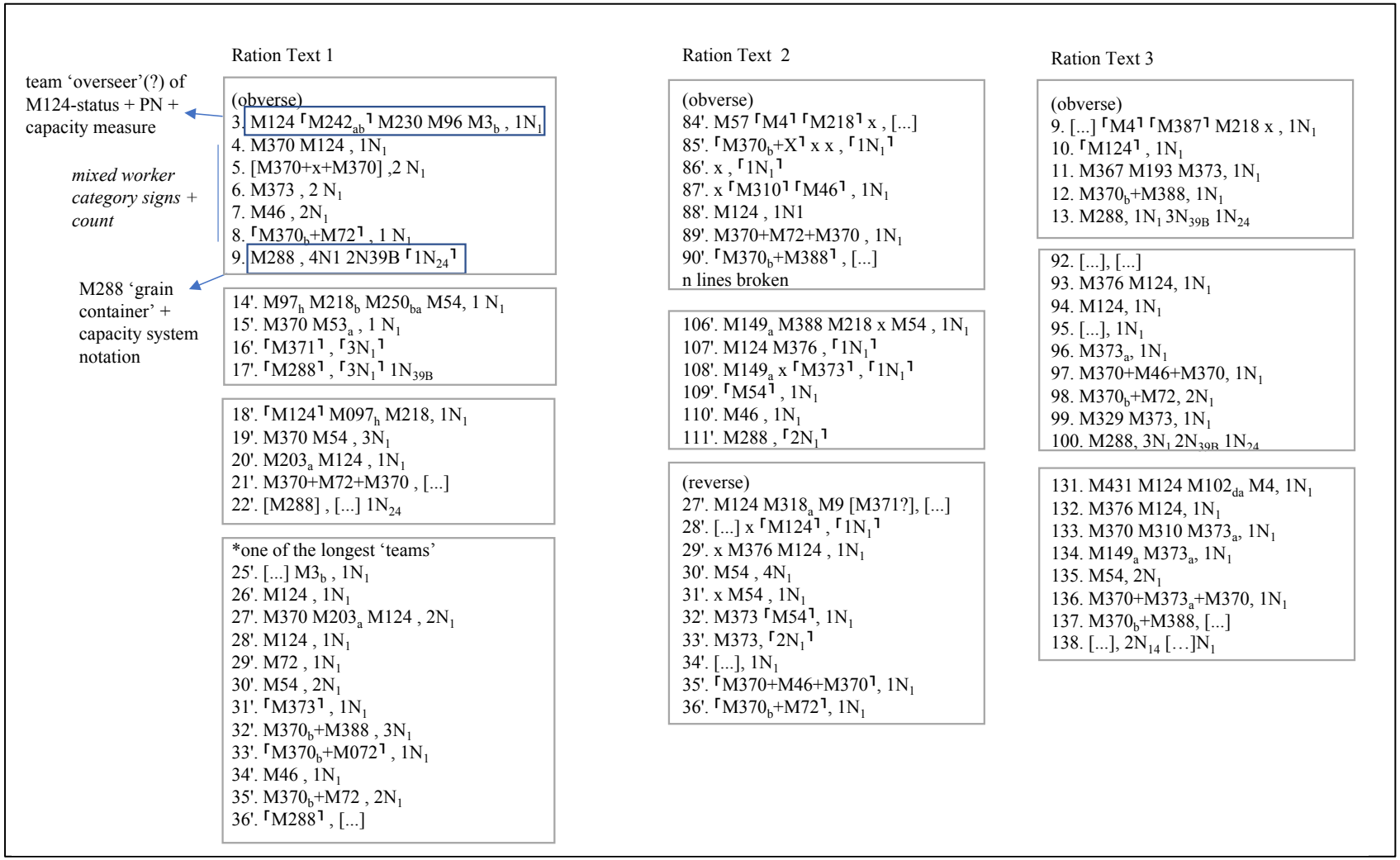


Figure 8.14 Examples of complete and nearly complete 'teams' or workers in the very long rations texts

M370 

In addition to the combinations $M370_b$ and M370+x+M370 which are more confidently identified as 'children', the sign M370 on its own is used. By present hypothesis, M370 probably does not represent a simple graphical variant of a semantically identical sign. The graphical form suggests that scribes might have understood $M370_b$ as a complex grapheme M370 + M370. If the sign TUR was borrowed from cuneiform, the use of M370 'on its own' represents an interesting re-interpretation of the meaning, as it would be a 'deconstructed' part of the sign TUR. What 'half' the sign for a child could represent is unclear, and while on the one hand M370 might represent an entirely unrelated sign, it is linked to the use of the M370 complex graphemes by its presence in all but one of the very long rations texts and fragments discussed above. However, it is also more broadly used that the complex graphemes, appearing in over 50 texts altogether. This includes eight more texts that include M72, as well as around 30 more texts in which neither other M370 'children' signs nor M72 'females' appear. Further analysis is needed on the uses of this sign. In the very long ration texts M370 is used in short combinations *preceding* other 'worker category' signs (for this reason it hasn't been included in the 'basic' worker category list in fig. 8.13). In these entries, M370 consistently comes first with one exception (fig. 8.15), and is followed by either one or two of the worker category signs combined. The basic worker category signs are thought to represent counted 'person categories', and are mostly distinct from the signs used to complexly identify the unit headers in these same very long rations texts (Dahl et al. 2018). The modification M370 to these categories could indicate 'young person of category x', in which case the number of children recorded in proto-Elamite is much higher than indicated above.

M370 M124
M370 M54
M370 $M203_a$ M54
M370 M72
M370 $M203_a$
M370 M46 (?)
M370 M124 M376
M370 M376 M001
M370 M369 (?)
M370 M373
M370 (?) M376 M072
M370 M376 M124
M370 M388 (*MDP 17, 120 only)
$M351+1N_{14}$ M370

Figure 8.15 Combinations in which M370 appears in the very long ration text genre

However, in other texts M370 appears in more diverse designations, both longer and short, and (rarely) may also stand on its own in an entry (MDP 6, 383). In MDP 6, 253 it appears before the entry-final M346, in a situation hypothesised to represent the 'owner' of that M346 'sheep'. In other cases it appears in longer designations, such as entry 4' from MDP 6, 309:

M388 $M66_1$ $M352_n$ M370 M218 M288

Here, M388 could introduce the person category, followed by a complex designation of the individual that is four signs long, and ending in the 'grain container' sign M288 which tells us this entry is followed by a numerical notation in the capacity system (a grain distribution?). M370 appears in the middle of this designation with unknown significance.

A few unusual uses of M370 complex graphemes

An important observation is that $M370_b$ and M370+x+M370 do not show the strong signs of multi-valency apparent for the TUR sign in the Uruk IV/III texts. The signs are limited to ten closely related ration lists plus the possibly related MDP 6, 287, and just two outlying examples: MDP 26, 177 and MDP 26, 71 (Appendix nos. xi–xii). MDP 26, 177 is a fragment of a grain distribution or calculation text including small units and signs not characteristic of the ration lists above, while MDP 26, 71 appears to be a 'staff list' of different nature altogether to the very long ration texts. The second of these is briefly described below.

Officials?

MDP 26, 71 is a complete text with 95 entries and a summary on the reverse. The entries are diverse complex designations, accompanied by 1 N_1 (or in only two cases, possibly 2 N_1). A distinguishing feature of this text is that $M370_b$ is used only once in the 95 lines, and these lines do not show the regular repetitions that characterise the above texts. Neither does the text use the signs M72 or M388. Rather, it may be more comparable to the administrative staff lists in the proto-cuneiform corpora. An image of the reverse is not available, but MDP 26 provided a copy of the summary line on the reverse. The numerical summary shows that the text is in the sexagesimal system. This type of evidence led Englund to propose that the Babylonian-loaned sexagesimal system may have been used to record 'high status' humans, while the native decimal system was reserved for labourers (most recently, Englund 2011: 46–7). The use of $M370_b$ in this text in the entry M210 M153 M370b may well represent an official whose title incorporated the element M370b much in the same way as the proto-cuneiform administrative SANGA TUR, or the IM_a TUR of the lexical material.

Livestock?

Among all eleven other closely related texts that use M370 complex graphemes, the signs are used in a consistent manner and hypothesised to record humans in all cases. A possible exception among these is MDP 6, 287 (Appendix page 448): this is a short receipt with two lines and 3–4 entries altogether. In a difficult to interpret context, $2N_1$ M370 $_b$ + M72 (two girl children?) occur before a single stroke used to separate entries in an unclear way, followed by a 'subscript' consisting of M9 (a single stylus impression perhaps used to separate sections of information) and the sign M346, which is known to stand for a female sheep. This is the only text identified in the corpus here in which we have some indication that $M370_b$ is used in close association with livestock accounting practices. On the other hand, the meaning of M346 as a sign in a subscript is uncertain. Dahl et al. (2018: 9 fn 11) have speculated that the document could also represent the only identifiable receipt including the type of information that is compiled into the complex ration texts.

Conclusions

The fragmentary very long ration texts, plus the three texts mentioned above represent the extent of the uses of M370 complex graphemes, and by hypothesis the extent of records of children in the proto-Elamite texts. The limitation of these complex graphemes to a coherent genre of texts all containing M72 'women' provides strong correlation between the two hypothetical person categories, despite the fact that M370 complex graphemes do not appear in direct associate with M72 within the 'worker teams'—that is, M370 complex graphemes rarely appear in an entry directly following M72. Further analysis of the 50+ texts including the variant M370 may clarify its meaning, and perhaps extend the number accounts including young people, although the different pattern of use of M370 in texts outside the long ration text genre suggest they may be a separate 'worker category' sign.

Perhaps surprisingly, the texts described above present a closer parallel in structure and content (so far as it can be understood) to later third millennium rationing texts involving large groups of women and children than do any proto-cuneiform documents. The ten fragmentary very long ration texts may be the earliest known personnel accounts for households that were organising groups of dependent workers including children in the dozens to hundreds, remunerated with standard grain distributions.

Chapter 9: Conclusions

The proto-Elamite and proto-cuneiform administrators chose to write in different scripts and carve different glyptic styles, reflecting clearly delineated cultural spheres. The numerical systems represent the strongest point of contact between the two writing systems, which is consistent with what is known of other script developments across the world—foreign numerical signs and some other marks may be easily incorporated into a writing system, while non-numerical signs are only very infrequently adopted from foreign systems while retaining similar values (de Voogt and Quack 2012). Yet the evidence discussed in this dissertation confirms that another strong point of contact between the two scripts was the set of signs sometimes used to describe male, female and young humans and animals in certain contexts. It has previously been assumed that these signs evidence a prominent place for labour organization among the proto-cuneiform and proto-Elamite sources, but this study has undertaken specific articulation of the accounting practices involving these signs, producing a number of conclusions on the role of gender and age designations in the earliest written documents of the region.

Results of a corpus-wide approach

A corpus-wide approach was taken in this study, which was facilitated by the electronic database of transliterated and imaged proto-cuneiform and proto-Elamite texts. Instead of depending on a few select texts and sign uses in order to construct broad arguments about the importance of labour organization throughout the written sources, the entire corpus was mined for the relevant signs, and those texts were then analyzed. The results demonstrate the necessity of contextualizing sign-based studies in corpus-wide research.

KUR$_a$

slave or dependent (male); *foreign / mountain origin* for products, names and other designations; *adult male equid*

in conjunction with other signs: *young wild (?) male sheep, goat and equid; wild bull*

phonetic uses (?): /gur/ and /kurun/

SAL

Woman of low or high class ; *slave* or *female dependent*, esp. with KUR$_a$; *adult female equid*

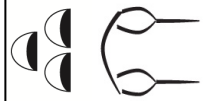
other: part of household and geographic designations; unconfirmed: *thin, fine*(?)

in conjunction with other signs: *young female sheep, goat, and equid* (esp. contrasting with KUR$_a$-young).

TUR

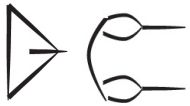
small, subordinate, child; *child slave*, esp. with SAL/KUR$_a$

KUR$_a$ TUR



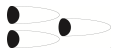
young male slave-child (younger than ŠA$_3$ KUR)

SAL TUR



young female slave-child (younger than ŠA$_3$ SAL)

M388



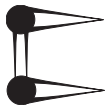
person (of M388-status), and by association: work-group overseer, named ration-receiver; less commonly: unnamed-worker category; *man*?

M72

unnamed *woman* of low class / worker category; female animal?

Tepe Yahya only (once) : part of a shepherd's personal designation

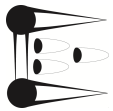
M370$_b$



unnamed *young dependent worker*? (rare)

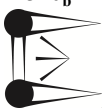
(once): *subordinate staff member?*

M370$_b$ + M388



unnamed *young male worker*/ ration receiver

M370$_b$ + M72



unnamed *young female worker*/ ration-receiver

Figure 9.1: Proposed meanings for the parallel proto-cuneiform and proto-Elamite sign sets discussed in this study.

Despite the emphasis in secondary literature (Damerow and Englund 1989a; Nissen et al. 1993; Englund 1998, 2006, 2009, 2004a, 2011) on proto-cuneiform and proto-Elamite as tools to control low-class workers, two of the key sign-sets (KUR_a and SAL for proto-cuneiform, and M388 and M72 for proto-Elamite) identified in those studies as representing 'workers' only appear together in a small percentage of known texts in each corpus. While the total percentages of texts using each sign are presented in figure 9.2, few of those texts, once analyzed, can in fact be shown to refer to humans of demonstrably low class. The proto-cuneiform corpus records human slaves or dependents by gender and age in less than 1% of known texts. A similarly small genre of texts in proto-Elamite records women and children in ration lists, although individuals of the M388-class (possibly male workers) are very common. The sorting of the corpora according to text content and sign use undertaken in this dissertation has therefore resulted in a more balanced perspective on the importance of worker-lists as part of the labour organization practices of the early scribes of Western Asia, and particularly on the use of gender and age designations in relation to this.

Gender, age and text genre in proto-cuneiform and proto-Elamite

The process also resulted in the partial clarification or identification of several small genres of texts that directly reference workers (most with only a few textual examples each). In proto-cuneiform, these genres include:

1. **Uruk IV receipts** (pages 106–13/282–285) that clearly contrast males (KUR_a) and females (SAL), with an unclear accounting purpose. This dissertation proposed that the receipts may record transactions or temple donations involving either humans or animals.
2. short **slave or dependent personnel rosters** using 'scheme 1' gender and age designations KUR_a, SAL, SAL.KUR_a, $ŠA_3$ (TUR/SAL/KUR_a), and/or TUR (SAL/KUR_a) and sometimes recording individuals along with their personal names. Including:

    a. two fragmentary texts with UR_5 SAL and $ŠA_3$ SAL/KUR_a KURa TUR that may record **female millers and their male and female children** (page 383)
    b. three or four **'captives-cum-labourer' rosters** (pages 118–22/ 278–9) from Jemdet Nasr that predominately record females of the KUR_a-identity, and include small numbers of TUR children; possibly recording all individuals along with personal names.
3. **Scheme 2 age category texts** (376 ff.), including groups of 'yearlings' and the age groups AL ('adult') and EN.TUR ('adolescent'?). The number of young humans (?) in these texts are much larger in comparison to the scheme 1 texts. These documents are the most difficult to contextualize, and may record either young people, subordinate administrators, or even animals destined for redistribution among administrative personnel.

While uses of the signs KUR_a and TUR outside of some of these texts types do not seem to directly reflect the administration of human labourers, SAL is used in a wide variety of contexts, most of which are poorly understood, but several of which may be described as records of female personnel of varying roles (including possible female brewers, weavers, and cultic personnel). In this sense, SAL is the sign from this set most widely relevant to discussion of 'labour administration' in proto-cuneiform.

Results of the study highlight the danger in the assumption that proto-cuneiform account genres will closely reflect (or be limited to) later cuneiform accounting genres. This is particularly relevant to discussion of the scheme 2 texts involving EN.TUR, whose administrative context remains open to speculation. The study also highlights the fact that worker-and-ration lists are almost entirely unknown in proto-cuneiform—and are not associated with the identifiably low-class individuals marked with age and gender signs as is known in third millennium cuneiform roster-and-ration lists. Instead, the tracking of grain movement, which is a common proto-cuneiform accounting subject, is associated with a variety of text types and undeciphered proto-cuneiform sign combinations that may represent institutions or named individuals, among other things.

In proto-Elamite, the most important textual genre discussed was that of the complex ration lists (Appendix pages 446–8) including M72 ‘women’ and M370$_{(b)}$ + x ‘male and female children’ among several other undeciphered ‘worker categories’ (also identified in Dahl et al. 2018). In contrast to the proto-cuneiform rosters, it appears that individuals in these proto-Elamite rosters are not recorded along with personal names but are perhaps ‘categorized’ by their roles in the workforce, including the category hypothesized to indicate simply ‘female’ (M72) (but see below page 425–6).

These large proto-Elamite ration lists including women and children recall later third millennium cuneiform worker rosters-and-ration lists—particularly the geme$_2$-dumu texts recording female weavers and their children (Waetzoldt 1972/ Maekawa 1980b). It is surprising that a later cuneiform textual genre may find closer structural parallel in a proto-Elamite text genre than in any known proto-cuneiform examples. This later cuneiform textual evidence, in association with the glyptic evidence for early textile production in Susiana (chapter 3), suggests that textile production is a strong candidate for the work-group contexts of these proto-Elamite ration lists. However, several problematic features of these long rationing texts in proto-Elamite require future attention. Foremost among the puzzling aspects of the texts is that they record dozens of unnamed (and therefore undistinguishable) workers through gross repetition of several sets of ‘worker category’ signs, of which M72 ‘women’ are just one group. The lack of direct connection between the M72 ‘women’ and the M370-complex grapheme ‘children’ within the text format also gives pause to any comparison with the pre-Sargonic geme$_2$-dumu texts. That the text entries are made up of ‘worker

category signs' as proposed by Dahl et al. (2018) and maintained in this study, remains a working hypothesis.

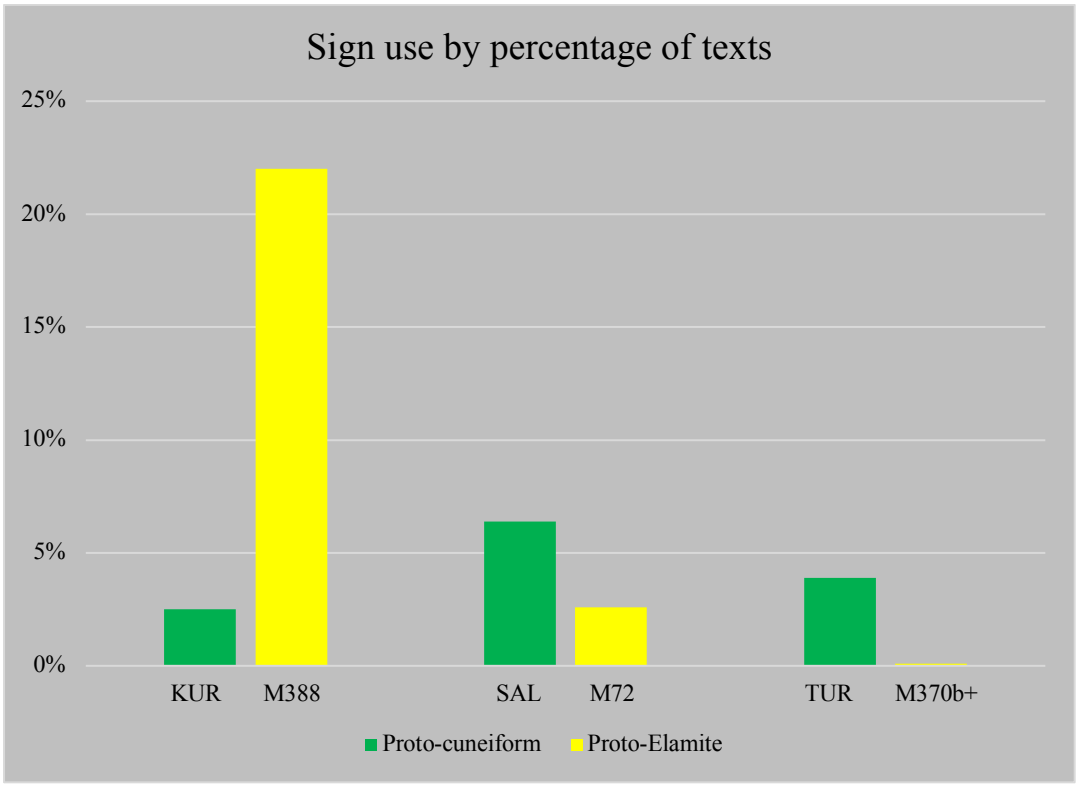


Figure 9.2: *Comparison of sign use by the percentage of texts in each corpus that contain an attestation of each sign. M388 is the most common of the signs represented above, appearing in 22% of known proto-Elamite texts. M370-complex graphemes are the least common, appearing in less than 1% of texts. These statistics do not consider the multivalency of signs: for example, all uses of KUR$_a$ are included, whether in reference to humans, animals, products, or institutions.*

This study is the first to explicitly compare *how* the gender and age sign sets were used in proto-cuneiform and proto-Elamite. However earlier, more cursory comparisons between the two scripts were significant in establishing the lens through which proto-cuneiform in particular was understood: that is, it was the evidence from proto-cuneiform and proto-Elamite texts *combined* that led Nissen et al (1993: 70 ff.), and Englund (1998, 1999:46–7) to confidently compare labour organization practices in the late fourth millennium with those of later third millennium cuneiform and

thereby establish the emphasis on the theme of controlling a workforce within proto-cuneiform studies. That is, while KUR_a, SAL, and TUR in proto-cuneiform are known primarily from ambiguous Uruk IV receipts and a handful of 'rosters', the signs M72, M388, and the M370-complex graphemes are used in clearer 'rationing' lists with strong later Mesopotamian parallels. And while the uses of the 'yoke' sign $ERIM_{a-c}$ in proto-cuneiform are difficult to interpret, with the clearest use appearing to label a group of primarily SAL.KUR_a captives from Jemdet Nasr, the use of ERIM's graphical equivalent M54 in proto-Elamite as a commonly counted 'worker category' sign strengthens the comparison of both signs with later Sumerian $erin_2$ as a designation for workers engaged on various construction projects, agriculture, and other work.

Yet these observations on shared sign sets in the two systems, most significantly by Damerow and Englund (1989a) and Nissen et al (1993), were not thoroughly explored in order to establish the range of uses of the signs unique to each writing system. This led to a presentation of proto-cuneiform material that implied an association between gender designations of 'low status workers' (Nissen et al 1993) and ration-lists of clear relationship to labour organization—when in fact this is instead an association only clear in proto-Elamite texts. A proto-cuneiform textual genre combining gender and age signs and rationing doesn't exist: the sign-set KUR_a SAL and TUR can therefore be uncoupled with broader discussions of labour organization, and instead understood as a marginal terminological set applied to small rosters of slaves or foreign captives.

Sign use in proto-cuneiform and proto-Elamite

The use of proto-cuneiform signs to indicate males, females, and children in labour or human resource contexts is even more limited than figures 9.2 and 9.3 initially suggest. Sign 'readings'—either phonetic or ideographic—cannot be assumed *a priori*, based upon later cuneiform values, but must be supported through proto-cuneiform contextual clues. The preceding chapters demonstrated that high levels of multivalency are known for proto-cuneiform signs already from the Uruk IV period, proving that statements by Algaze (2013:129–30) and Asher-Greve (2008:121) regarding the prevalence of records of human captives in proto-cuneiform, based only upon the number of uses of the signs SAL and TUR, are erroneous: analysis of sign use and text format instead shows that tracking female and child dependents together was a very rare practice in proto-cuneiform, judging by currently known corpora; and while female personnel were more widely recorded with SAL, they appear to have been of varying social and economic positions.

Contrary to the diverse uses of proto-cuneiform SAL and TUR (fig. 9.1/9.3), the proto-Elamite parallels M72 and the M370-complex graphemes appear not to display much or any multivalency, as shown by their especially limited and consistent use contexts. The KUR_a equivalent M388, on the other hand, is used in at least two distinct contexts apparently with different implications (below, pages 424–5). Yet overall, all three of the proto-cuneiform signs analyzed (KUR_{a-b}, SAL, and TUR) show much higher degrees of multivalency than do their proto-Elamite equivalents. This may suggest that the proto-cuneiform writing system was expanding the subjects

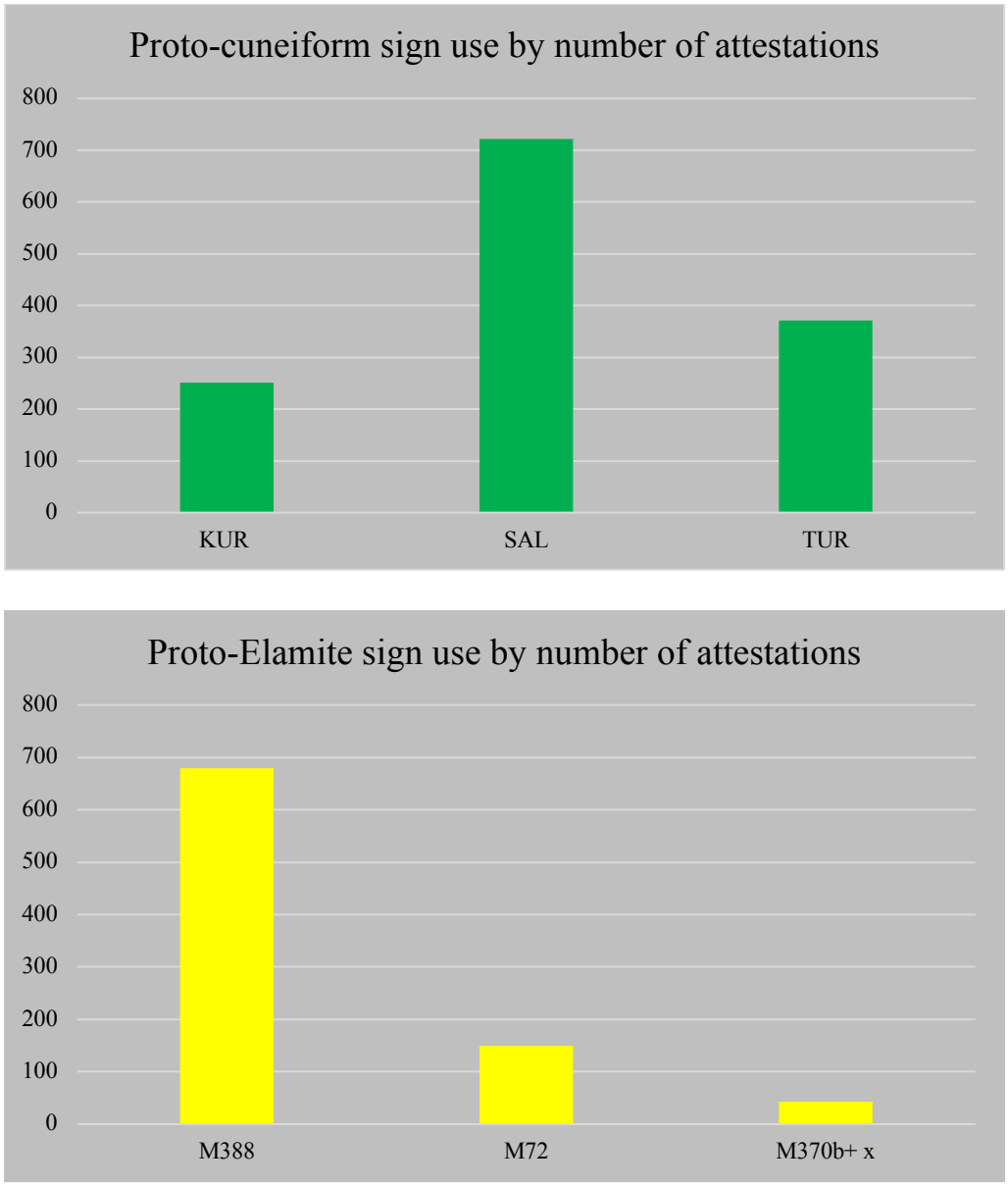


Figure 9.3: Comparing the total number of 'gender and age' sign-set uses between proto-cuneiform and proto-Elamite (Based upon the CDLI's electronic transliterations).

it could express through attaching varying meanings to signs, based upon either conceptual association or rebus effects. The proto-Elamite writing system proved to be a technological dead-end, and potential reasons for its failure have been sought in the past (e.g. Dahl 2013). It may be that the restricted uses of these proto-Elamite signs reflect a larger tendency within the writing system not to expand its communicative potential through flexible use of signs. The restricted use of signs for

women and children in proto-Elamite could also represent the borrowing of a sign-set from proto-cuneiform for a very niche accounting context which retained a unique identity in the proto-Elamite society. Further studies of proto-Elamite sign use, expanded to other sign sets, could begin to fill in the picture.

Slavery and captive-taking in proto-cuneiform

The approach taken in this study has produced an important observation that should drive future discussion on early writing and social control in the first cities of the Near East: the number of known texts that deal with what are probably slaves in proto-cuneiform (where they are identified by their sex and sometimes age) is small, and this is fully in keeping with the observed marginal significance of slavery in other periods of ancient Near Eastern history. In addition, there appears to be a somewhat larger number of SAL.KUR_a women than KUR_a men in the proto-cuneiform record, confirming that as in later third millennium Mesopotamia (e.g. Lafont 2013), there was a visible numerical importance of women in the textual records of Mesopotamia's urban workforce who were of foreign origin or from the margins of society.

The proto-cuneiform scheme 1 texts combine two primary types of identity markers to attach 'value' to the humans recorded: gender and age. The gender markers in particular are associated with slavery in early Mesopotamia because of the historical development of the sign SAL+KUR = $geme_2$, which in some (but not all) third millennium contexts refers particularly to female slaves. Returning to Brook's "*captives and cousins…"* (quoted on page 27–8), we are reminded that in the shepherding environment of 19th century southwest America, in which Spanish

colonialists were interacting with (semi)-nomadic native societies, in addition to sheep it is particularly captive *women and children* that Brooks identified as being crucial 'agents (and objects) of cultural negotiation'. Interaction between southern Mesopotamia and a Susiana-Iranian highlands coalition (or equally with the other regions surrounding Mesopotamia) may have similarly involved captive-taking on the borderlands–especially considering that the archaeological record suggests regional fracturing at this time. In this context, it is notable that a key feature of proto-cuneiform texts so far identified as recording captives and/or slaves is their prominent inclusion of women and children.

Gender and labour organization in proto-cuneiform

While gender and age were crucial to a few limited administrative contexts in proto-cuneiform, a far greater number of texts in both scripts detail the 'workforce'—including individuals such as administrators or cultic personnel—more broadly, and in complex ways that remain largely undeciphered. Gender may have been an essential factor in the division of tasks in society, but individuals were referred to solely by their gender (or sex) in only a small number of texts, which may record captives and/or lower-class workers in proto-cuneiform, judging by text format and other features. For example, family groupings were broken down in the key text W 23999,1 (fig. 5.11 and page 372), apparently for the convenience of the proto-cuneiform administrator, with males (both men, and ŠA TUR 'children') were separated to one side and females to the other. The way that the gender signs were used in these and other texts across the proto-cuneiform corpus provides insights on the overlapping of gender and other identities, or 'intersectionality' (page 30).

Gender and intersectionality in proto-cuneiform

Male gender and social identities

KUR_a was not widely used in proto-cuneiform as a general word for 'man' in the way that proto-Elamite M388 may have been, but instead was extremely limited in its use to indicate male humans. When it does, it most likely refers to 'foreign' and by extension 'slave' men.

Textual analysis in chapter 6a addressed the uncertainty expressed by earlier scholars (Uchitel 1984; Vaiman 1989) regarding whether there were in fact any meanings of KUR_a other than 'male slave' in proto-cuneiform. The analysis showed that KUR_a is both an indicator of the males of certain animals and humans on the one hand, and a marker for products, institutions, and a part of personal names on the other hand. The conceptual, lexemic, or phonetic link between these two uses is unknown and presents a problem. The conclusion of this analysis, that the sign KUR_a most likely indicated 'foreign' humans, through its ideographic association with a region at the fringes of the proto-cuneiform world (a mountain), is supported by a variety of evidence, outlined in chapter 6a. Among this evidence is the observation that Proto-cuneiform texts use the sign to describe 'foreign' products like nuts, wood, and wine, as well as apparently slaves, which are all historically known to derive from the north or east of Sumer.

It is proposed that KUR_a, when used for humans, may have indicated explicitly 'foreigner' or 'imported', and only implicitly 'male' (page 223), although this is difficult to prove, and a rebus based upon synonymns for 'mountain' and 'male' in an unknown linguistic context remains a possibility. However, the various ways to

indicate ‘man’ or ‘(male) person’ already in proto-cuneiform, minimally, LU_2; NITA; $NITA.KUR_a$; and KUR_a show that intersectionality is essential for describing and translating the ‘meanings’ of terms for men and male gender in these and later Mesopotamian texts—each of these terms probably contain information on economic and social position, as well as perhaps other group affiliations such as geographic identities. Chapter 6a (page 223) concluded by proposing a candidate for a lexeme associated with the sign KUR_a that could explain its use both as a product designation and a term for slaves: Akkadian *wardum* and associated words from the root *(w)arādu*, in reference to individuals who had ‘come down’ from the surrounding regions or perhaps from the mountains[212].

Female gender and social identities

In proto-cuneiform a depiction of a human pubic triangle and vulva (SAL) was used to identify slave women, but also cultic and administrative personnel that might be considered higher status and class (for example, the EN SAL had control of a large amount of land, page 315). This sign was also extended to most species for some (but not necessarily all) of that species’ female animals, and was particularly used as a sign standing on its own to represent adult female donkeys. These latter uses for animals represent ‘sex marking’ rather than ‘gender marking’. Unlike the use of different signs to mark male humans of differing identities or in differing contexts, SAL was

[212] The prolific use of graphically similar ‘mountain’ signs (M381–383) in proto-Elamite in positions that suggest they indicate household or individual identities is of unclear relevance to the proto-cuneiform meaning of KUR_a as an identity marker— KUR_a may after all reflect ambiguously ‘foreign’ identity including individuals and goods from northern Mesopotamia, rather than specifically a Susiana or Iranian highlands identity.

used widely to mark many types of women, as well as part of proper names that may be geographic locations and households or other social institutions.

Gender and intersectionality in proto-Elamite

Male gender and social identities

In contrast to KUR_a, the graphically inverse sign M388 in proto-Elamite appears to represent a person category that was central to proto-Elamite society and the proto-Elamite social order. It often appears at the beginning of strings of signs that may indicate personal names, although this hypothesis requires further exploration through analysis of the sign strings (fig. 6.22). The centrality of this person-marker to proto-Elamite society is shown first of all through the frequency of its use: M388 is the second most common proto-Elamite sign, occurring in almost a quarter of all proto-Elamite texts (fig. 9.2–3). M388 itself does not appear conceptually linked to 'mountain', which is relegated instead to the separate sign sets M381–383.

M388 probably held a general meaning of 'person' and possibly 'man', although the specific sex or gender implications of the sign across the corpus are uncertain. The majority of texts using M388 do not include M72 'women' (unlike the consistent pairing of KUR_a and SAL humans and animals in proto-cuneiform). However, in the small number of rosters that record M72 women and children, the sign M388 takes on a specific gender-marking role, where $M370_b$+M388 ('young male') is contrasted with $M370_b$+M72 ('young female') in a pattern whose interpretation is strengthened by proto-cuneiform slave text parallels. It is difficult to say whether the use of M388 in the M370-complex graphemes represents the same social identity as the M388 'adults' (who are often 'overseers') or whether proto-Elamite, after all did use the

sign multivalently to indicate male gender/sex in some cases and a social class or worker category in others. While the outline of sign use is entirely different from that of KUR_a, a similar problem arises in determining whether M388 indicates 'male' as a primary meaning or only as a 'default' situation of a primarily social-class marking sign. If the sign's semantic equivalent is 'man' (rather than just 'person') then the proto-Elamite corpus records many thousands more men than it does identifiable women.

Female gender and social identities

Unlike the proto-cuneiform SAL 'women' who were of diverse positions and appeared in different accounting contexts, in proto-Elamite around half of the small number of recorded instances of M72 'women' were in texts that also included 'children' in the form of the M370-complex graphemes. The remaining handful of texts using M72 also show consistent patterns, counting the sign as an 'object' in work rosters and ration lists. M72 is shown to always occur as the last sign within in an entry, with the exception of one text from Tepe Yahya.

The question must be raised: does the lack of M72 in the vast majority of proto-Elamite texts (in sharp contrast to M388), imply that few proto-Elamite texts recorded women? This is a possibility, but it may also be that many women are not explicitly 'marked' in the texts with M72, either because the information was assumed or not needed, or perhaps because the category M72 did not apply to all women. Circumstantial evidence suggests the possibility that M72 only indicated a certain kind of woman, in a manner similar to how KUR_a in proto-cuneiform only indicated captive, slave or other dependent men in restricted contexts. Speculatively, one could

suggest the possibility that the Proto-Elamite scribes, who devised a system which almost exclusively lacks signs that can be understood as depictions of human body parts (Dahl 2013) may not have considered the sign form M72 to depict a woman's sexual organs after borrowing the sign from their neighbours, and may not have then attached an abstracted value of 'female' to it as in proto-cuneiform—but instead applied the sign only to the slaves or working ration-receivers similar to those that it was applied to in the scheme 1 texts of proto-cuneiform.

Another reason to suggest that M72 may refer to only a specific class of women comes from the genre of long, repetitive ration texts including M72-women and children (M370-complex graphemes). These texts indicate that Proto-Elamite households were developing production traditions involving dependent workers organized in 'workshops' that were similar to (if smaller-scale than) those found in later Mesopotamia. These texts included a variety of other undeciphered signs that might represent 'worker categories'; if this hypothesis is correct, the texts reflect a high level of task-differentiation and role-managing on the part of the scribes. In this context, the scattered uses of M72 as one worker category among dozens of others (notably not M388) appears unusual if we are to take it as a general sign for 'woman', unless being a woman was an exceptional status in work-groups of otherwise diversely categorized men. Instead, M72 may be better understood as only a particular category of woman. This option is strengthened by the observation that 'children' are not recorded immediately in association with the M72 in the texts, but after a variety of worker signs that could represent other (male or female) workers.

Young people in proto-cuneiform and proto-Elamite accounts

While a number of Uruk IV texts contrast only adult KUR_a and SAL, the smaller number of texts from the Uruk III period that record KUR_a and SAL together almost always also include young people who were indicated by the sign combinations discussed in chapter 8. This tells us something about the cultural and economic practices by which KUR_a and SAL individuals were recorded—children were an integral part of this type of human resource during the Uruk III script phase. The very few texts explicitly recording children in proto-cuneiform represent a practice that was to be expanded in third millennium cuneiform labour administration.

The basic sign TUR was shared with proto-Elamite scribes who also decided, in a small genre of texts, to include what may be 'children' in some personnel rosters, sometimes marking them as male (M388) or female (M72). One of the strongest arguments presented in this dissertation in support of interpreting M370-complex graphemes as 'children' is the fact that this sign combination is almost exclusively limited to texts that also record M72 ('women'). However, no evidence has yet been found for smaller, 'child'-sized rations in proto-Elamite, and the ordering of M370-complex graphemes in texts doesn't suggest a clear association with particular M72 'mothers'. For the moment, it would be wise also to entertain another possible interpretation, that M370-complex graphemes represent 'dependents' or individuals of a subordinate status, who are mixed among workers of other categories—or even that M370-complex graphemes could after all refer to young animals, perhaps equids.

The question of class and status

The cumulative set of evidence for proto-cuneiform texts of 'scheme 1' described in chapter 8 suggests that some texts recorded captives who were assigned to institutions or work groups (MSVO 1, 212–214 'SAG x MA texts', figure 5.12/8.4i–k), while others may similarly have been slaves whom the scribes were sorting by gender and age in relation to economic practice (W 23999,1 figure 5.11/7.8a)—whether it be sale, calculation of expected labour output, rationing needs, or some other purpose. These individuals may un-problematically be described as lower class and low status, given the apparent lack of control over their own freedom (in the SAG x MA texts) or family arrangements (in W 23999,1). The 'status' of the adult AL, EN.TUR and 'yearlings' in scheme 2 texts is, however, not possible to judge until further clarification of those accounting contexts is achieved. The Uruk IV receipts recording one or two SAL and KUR_a reflect a cultural and economic practice that we cannot reconstruct with any certainty, although the hypothesis was forwarded in this dissertation (page 108) that these individuals could have had social identities similar to later a-ru-a 'temple devotees' that sometimes originated as orphans or captives.

The class of 'gender and age-defined' individuals in the proto-Elamite rationing texts and rosters, with a sign-set possibly derived from those low-class individuals in Mesopotamia, may by extension have been similarly 'low', although the evidence remains less interpretable due to the extinction of the writing system. The organization of individuals (including women and children) into 'groups' headed by what may be counted 'overseers' who appear to be provided with names, suggests a control over the labour of members of society which involved a minimum of two tiers of authority (the 'overseers' and the scribes recording them). At the same time,

smaller capacity measures and repetitive text structures involving worker categories in proto-Elamite (not only limited to the 'women and children' genre) give the impression that the scribes in Susa and elsewhere in Iran were attempting to micro-manage an ordinary labour force to a greater extent than in Uruk, where larger grain distributions and many other products may often have been entrusted to mid and high-level administrators. This may be evidence for a smaller-scale Susian economy, in which scribes attempted to track grain distributions down to the (nameless, but categorized) individual field worker; it may also reflect a different—perhaps less successful—approach to the use of writing as a new technology. While on the one hand the 'equality' of grain distribution sizes (1 worker: $15N_{30c}$) in relation to large numbers of differently-categorized individuals can be noted, a subtle understanding of the 'status' of ration receivers in these proto-Elamite texts, and the social contracts by which they were engaged by the scribal community, is probably not attainable.

Concluding comments

The most important distinction between the proto-cuneiform and proto-Elamite corpora with respect to their shared gender and age sign-set, is that proto-Elamite has clearer evidence for combining the gender and age worker category signs in repetitive 'rations lists' in which the nameless workers are listed with small grain distributions—whereas in proto-cuneiform the parallel signs, SAL, KUR_a and TUR are primarily known in short slave or captive 'rosters' that sometimes include personal names but without accompanying rations.

Some of the working hypotheses presented in this dissertation may prove to be wrong, and it is only through further articulation of these ideas that advances can be made in

decipherment. Since the publication of the unprovenanced proto-cuneiform equid accounts (CUSAS 1, 21, 31) the similarities in bookkeeping references between equids and the 'humans' outlined in scheme 1 and 2 texts (chapter 8) have become glaring. A crucial factor in Englund's (2009) identification of some texts as recording human slaves is the presence of 'naming cases' corresponding to the number of individuals counted, and a better understanding of these alleged 'naming cases' is therefore critical to maintaining confidence in the identification of slave or dependent rosters in proto-cuneiform, and perhaps by extension the use of the shared sign-set for humans rather than animals in proto-Elamite. While many questions remain unanswered, it is hoped that by outlining the uses of these proto-cuneiform and proto-Elamite signs discussed above, the relevance of gender and age markers to the 'human resource management' of the earliest Mesopotamian and Iranian scribal communities has already become better understood.

Works Cited

Abdi, K. 2003. 'From écriture to civilization. Changing paradigms of proto-Elamite archaeology', in N. F. Miller and K. Abdi (eds), *Yeki bud, yeki nabud. Essays on the Archaeology of Iran in Honor of William M. Sumner*. Los Angeles: Cotsen Institute of Archaeology.

Adams, R. McC. 2014. 'Reflections on the early southern Mesopotamian economy', in Feinman, G. M. and L. M. Nicholas (eds) *Archaeological Perspectives on Political Economy*. Salt Lake City: University of Utah, 41–59.

—1981. *Heartland of Cities*. Chicago: University of Chicago.

Akkermans, P. M. M. G. and G. M. Schwartz. 2003. *The Archaeology of Syria. From Complex Hunter-Gatherers to Early Urban Societies (ca. 16,000–300 BC)*. Cambridge World Archaeology. Cambridge: Cambridge University.

Andersson, J. 2012. *Kingship in the Early Mesopotamian Onomasticon 2800–2200 BCE*. Uppsala: Uppsala Universitet.

— 2005. 'Critique of Guillermo Algaze's 'The Sumerian Takeoff'', *Structure and Dynamics* 1, 1.

Andersson, E. and M.–L. Nosch (eds). 2015. *Tools, Textiles and Contexts. Investigating Textile Production in the Aegean and Eastern Mediterranean Bronze Age*. Ancient Textiles Series 21. Oxford: Oxbow.

Al-Zubaidi, L. 'Tracing women in early Sumer', in K.A. Pyburn (ed), *Ungendering Civilization*, New York and London: Routledge, 117–35.

Alden, J. R. 2013. 'The Kur River Basin in the Proto-Elamite era – surface survey, settlement patterns, and the appearance of full-time transhumant pastoral nomadism', in Petrie 2013 (ed), 207–32.

Algaze, G. 2013. 'The end of prehistory and the Uruk period', in H. Crawford (ed), 68–94.

— 2008. *Ancient Mesopotamia at the Dawn of Civilization: The Evolution of an Urban Landscape*. Chicago: University of Chicago.

—1993. *The Uruk World System: The Dynamics of Early Mesopotamian Civilization*. Chicago: University of Chicago.

—1989. The Uruk Expansion: Cross-cultural exchange in the early Mesopotamian civilization. *Current Anthropology* 30/5, 571–608.

Alizadeh, A. 2010. 'Rise of the highland Elamite state in Southwestern Iran: 'enclosed' or 'enclosing' nomadism?', *Current Anthropology* 51/3, 353–83.

Amin, S. 1976. *Unequal Development*. New York: Monthly Review.

Amiet, P.1980. (original 1961) *La glyptique Mésopotamienne archaïque*. Éditions du Centre National de la Recherche Scientifique 15. Paris.

—1979. 'Archaeological discontinuity and ethnic duality in Elam', *Antiquity* 53, 195–204.

—1972. *Glyptique Susienne des origines à l'époque des Perses achéménides: cachets, sceaux-cylindres et empreintes antiques découverts à Suse de 1913 à 1967*, *Volumes 1–2*. Mémoires de la Délégation Archaéologique en Iran 43. Paris: P. Geuthner.

D'Anna, M. B. 2016. 'A material perspective on food politics in a non-urban center. The case of Arslantepe period VI A (LC5)', in D'Anna et al. (eds), 61–70.

—2012. 'Between inclusion and exclusion. Feasting and redistribution of meals at Late Chalcolithic Arslantepe (Malatya, Turkey)', in Pollock (ed), 97–123.

D'Anna, M. B. and C. Jauß. 'Cooking at 4th millennium BCE Chogha Mish (Iran) and Arslantepe (Turkey). Investigating the social via the material', in S. Kerner, C. Chou, and M. Warmind (eds), *Commensality. From everyday food to feast*. Bloomsbury: London, 65–85.

D'Anna, M. B , C. Jauß, and J. C. Johnson. 2016. 'Introduction. Food and urbanization: Material and textual perspectives on alimentary practice in early Mesopotamia', in D'Anna et al. (eds), 8–14.

—(eds), *Material and Textual Perspectives on Alimentary Practice in Early Mesopotamia*, Origini ,Preistoria e Protostoria elle Cilivtà Antiche XXXVII.

Aperghis, C. G. 2000. 'War captives and economic exploitation. Evidence from the Persepolis Fortification tablets', in J. Andreau et al. (eds) *La Guerre dans les Economies Antiques*. St-Bertrand-de-Comminges, 127–44.

Archi, A. 2015. *Ebla and its Archives: Texts, History, and Society*. Rome: Missione archeologica italiana in Siria.

Asher-Greve, J. M. 2008. 'Images of men, gender regimes, and social stratification in the Late Uruk period', in D. Bolger (ed), *Gender Through Time in the Ancient Near East*. Plymouth: Alta Mira, 119–71.

—1985. *Frauen in Altsumerischer Zeit*, Bibliotheca Mesopotamica (BM) 18. Malibu: Undena, 63–179.

Baines, J. and N. Yoffee. 1998. 'Order, legitimacy, and wealth in Ancient Egypt and Mesopotamia', in D. E. Schwartz (Ed), *Archaic States*. School of American Research Advanced Seminar Series. Santa Fe: Schools of American Research, 199–260.

Balke, T. E. 2014. 'Some observations on the Old Sumerian onomasticon', in N. Koslova et al. (eds), *Studies in Sumerian Language and Literature*. Winona Lake: Eisenbrauns, 83–98.
Bartash, V. 2016. 'Terminology for children in Sumerian administrative records'. Paper delivered at the 1st Berner Altorientalisches Forum, 24–25 June 2016.
—2014. 'E$_2$-mi$_2$ 'women's quarters': the earliest written evidence', in F. Buccellati, T. Helms, and A. Tamm et al. (eds), House and Household Economies in 3rd Millennium B.C.E. Syro-Mesopotamia. BAR International Series 2682. Oxford: Archeopress, 9–20.
—2015. 'Children in institutional households of Late Uruk period Mesopotamia', *Zeitschrift für Assyriologie und vorderasiatische Archäologie* 105/2, 131–138.
—2016. 'Terminology for children in Sumerian administrative records', BAF-Online: *Proceedings of the Berner Altorientalisches Forum* 1 (2016). ISSN 2504-2076. Available at: <https://bop.unibe.ch/baf/article/view/3502>. Date Accessed: 24 Aug. 2017.
Batiuk, S. and M. S. Rothman. 2007. 'Early Transcaucasian cultures and their neighbours—unraveling migration, trade, and assimilation', *Expedition* 49/1 (March). <http://www.penn.museum/sites/expedition/?p=9411>
Bauer, J. 1989. 'Altsumerische Wirtschaftsurkunden in Leningrad', *Archiv für Orientforschung* 36/37, 79.
Beale, T. W. 1978. 'Bevelled rim bowls and their implications for change and economic organization in the later Fourth Millennium BC'. *Journal of Near Eastern Studies* 37, 289–318.
Becker, A. 1993. *Uruk: Kleinfunde I—Stein*. Ausgrabungen Uruk-Warka 6. Mainz: von Zabern.
Behrens, H., and H. Steible. 1983. *Glossar zu den altsumerischen Bau- und Weihinschriften*. Freiburger Altorientalische Studien 6. Stuttgart: Steiner.
Bernbeck, R. 2009. 'Class conflict in ancient Mesopotamia: Between knowledge of history and historicising knowledge', *Anthropology of the Middle East* 4/1, 33–64.
Biga, M. G. 2016. 'The role of women in work and society in the Ebla Kingdom', in Lion and Michel (eds), 71–89.
Biggs, R. 1974. *Inscriptions from Tell Abū Ṣalābīkh*. The University of Chicago Oriental Institute Publications XCIX. Chicago: University of Chicago.
—1966. 'Le lapis-lazuli dans les textes sumériens archaïques' *Revue d'Assyriologie et d'Archéologie Orientale* 60/2, 175–6.
—Biggs, R. 1964. 'Semitic names in the Fara period', *Orientalia* 36 (1) : 55–66.
Boehmer, R. M. 1999. *Uruk: früheste Siegelabrollungen*. Ausgegrabungen in Uruk-Warka Endberichte 24. Deutsches Archäologisches Institut Orient-Abteilung. Mainz am Rhein: Von Zabern.
Borger, R. 2004. *Mesopotamisches Zeichenlexikon*. Münster : Ugarit.
Brandes, M. A. 1980. 'Waffenkammer' — ein neues Siegelthema der Uruk-Zeit' in *Forschungen und Funde. Festschrift Bernhard Neutsch*. Innsbruck: Institut für Sprachwissenschaft der Universität Innsbruck, 77–87.
—1979. *Siegelabrollungen aus den archaischen Bauschichten in Uruk-Warka*. Wiesbaden: F. Steiner.
Bréniquet, C. 2016. 'Weaving, potting, churning. Women at work during the Uruk period: Evidence from the cylinder seals', in Lion and Michel (eds), 8–28.
—2014. 'The Archaeology of Wool in Early Mesopotamia: Sources, Methods, Perspectives', in C. Bréniquet and C. Michel (eds) 2014, 52–78.
—2010. 'Weaving in Mesopotamia during the Bronze Age: Archaeology, techniques, iconography', in Michel, C. and M. L. Nosch (Eds), *Textile Terminologies in the Ancient Near East and Mediterranean Area from the Third to the First Millennia BC*. Ancient Textile Series 8. Oxford: Oxbow, 52–67.
—2008. *Essai sur le tissage en Mésopotamie, des Premières Communautés Sédentaires au Milieu du 3e Millénaire avant J. –C.* Travaux de la Maison René-Ginouvès 5. Paris: De Boccard.
—1996.'Du fil à retordre: réflexions sur les idoles aux yeux et les fileuses de l'époque d'Uruk', in *Collectanea Orientalia. Histoire, Arts de l'Espace, et Industrie de la Terre. Etudes Offertes en Hommage à Agnès Spycket.* Neuchâtel: Recherches et publications, 31–54.
Bréniquet, C. and C. Michel (eds). 2014. *Wool Economy in the Ancient Near East and the Aegean. From the Beginnings of Sheep Husbandry to Institutional Textile Industry*. Oxford: Oxbow.
Bresson, A. 2016. *The Making of the Ancient Greek Economy. Institutions, Markets, and the Growth of City-States*. Trans. by S. Rendall. Princeton: Princeton University.
Briant, P. 2013. 'Susa and Elam in the Achaemenid Empire', in Perrot (ed), *The Palace of Darius at Suda: The Great Royal Residence of the Achaemenid Empire*, 3–25.
Brice, W. C. 1962. 'The writing system of the Proto Elamite account tablets of Susa', in *Bulletin of the John Rylands Library* 45/1, 15–69.
Brooks, J. F. 2002. *Captives and Cousins. Slavery, Kinship, and Community in the Southwest Borderlands*. Chapel Hill: The University of North Carolina.

Buccellati, G. 1990. 'Salt at the dawn of history: The case of the bevelled-rim bowls', in P. Matthaie, M. van Loon and H. Weiss (eds), *Resurrecting the Past. A Joint Tribute to Adnan Bounni*. Leiden: Uitgaven van Nederlands Historisch-Archaeologisch Instituut te Istanbul, 17–40.
Burrows, E. 1935. *Ur Excavations Texts II. Archaic Texts*. Publications of the Joint Expedition of the British Museum and of the University Museum. Philadelphia: University of Pennsylvania.
Butterlin, P. 2003. *Les Temps Proto-Urbains de Mésopotamie. Contacts et Acculturation à l'Epoque d'Uruk au Moyen-Orient*. Paris: CNRS Editions.
Caldwell, J. R. (ed) 1967. *Investigations at Tal-i-Iblis*. Springfield: Illinois State Museum Preliminary Reports 9.
Carneiro, R. 1970. 'Theory of the Origin of the State', *Science* 169, 733–8.
Cavigneaux A. and M. Krebernik. 1998. '^{d}Nin-MÙŠ.KUR', *Reallexikon der Assyriologie und Vorderasiatischen Archäologie* 9, 474.
Chambon, G. 2003. 'Archaic metrological systems from Ur'. *Cuneiform Digital Library Journal* 5, 1–8.
Charvát, P. 2014a. 'Lambs of the Gods. The beginnings of the wool economy in Proto-Cuneiform texts', in Breniquet and Michel (eds), 79–93.
—2014b. 'Cherchez la femme: The SAL sign in Proto-Cuneiform writing' in L. Marti (ed), *La Famille dans le Proche-Orient Ancien: Réalités, Symbolismes, et Images.* Proceedings of the 55th Rencontre Assyriologique Internationale at Paris 6–9 July 2009. Winona Lake: Eisenbrauns, 169–82.
—2012. 'Fortitudo, justitia, prudentia, temperantia: The Sign NITA/UŠ in Proto-Cuneiform Writing' in H. D. Baker, K. Kaniuth, and A. Otto (eds), *Stories of Long Ago. Festschrift für Michael D. Roaf* Alter Orient un Altes Testament (AOAT 397). Münster: Ugarit, 57–68.
—2011. 'On sheep, Sumerians and the early State', in Vacín (ed) 2011, 49–60.
—2002. *Mesopotamia Before History*. London: Routledge.
—1998. *On People, Signs and States*. Prague: The Oriental Institute Academy of Sciences of the Czech Republic.
Chazan, M. and M. Lehner. 1990. 'An ancient analogy: Pot baked bread in ancient Egypt and Mesopotamia', *Paléorient* 16, 21–35.
Childe, V. G. 1950. 'The Urban Revolution' *Town Planning Review* 21/1, 3–17.
Civil, M. 2013. 'Remarks on AD-GI$_4$ (A.K.A. 'Archaic word list C' or 'Tribute')', *Journal of Cuneiform Studies* 65, 13–49.
—2008. *The Early Dynastic Practical Vocabulary A: Archaic HAR-ra A*. Archivi reali di Ebla 4. Rome: Missione archeologica Italiana in Siria.
—1973. 'From Enki's headaches to Phonology' *Journal of Near Eastern Studies* 32 1/2, 57–61.
—1969. *Materials for the Sumerian Lexicon* XII. The Series lú = *ša* and related texts. Rome: Pontificum Institutum Biblicum.
Cohen, A. 2007. 'Introduction: Childhood between past and present', in A. Cohen and J. B. Rutter (ed) *Constructions of Childhood in Ancient Greece and Italy*. *Hesperia* Supplements 41. Princeton: American School of Classical Studies at Athens, 1–22.
Collon, D. 1987/2005 (revised and updated). *First Impressions: Cylinder Seals in the Ancient Near East*. London: British Museum.
Cooper, J. S. 2010. 'Blind workmen, weaving women and prostitutes in third millennium Babylonia'. *Cuneiform Digital Library Notes* 2010/5, 1–2.
Costin, C. L. 1996. 'Exploring the relationship between gender and craft in complex societies. Methodological and theoretical issues of gender attribution', in R. P. Wright (ed), *Gender and Archaeology*, Philadelphia: University of Pennsylvania, 111–40.
—1991. 'Craft specialisation: Issues in defining, documenting, and explaining the organization of production'. *Archaeological Method and Theory* 3, 1–56.
Crawford, H. E. W. 1991. Review of R. Eichmann 1989 'Uruk, Die Stratigraphie'. Bulletin of the School of Oriental and African Studies 54/2, 357–8.
—1973. 'Mesopotamian invisible exports', *World Archaeology* 5, 231–41.
Crenshaw, K. 1989. 'Demarginalizing the intersection of race and sex: A black feminist critique of antidiscrimination doctrine, feminist theory and antiracist politics', *The University of Chicago Legal Forum* 1989/1, 139–67.
Dahl, J. L. *Forthcoming*. [Title TBD]. Texts cuneiforms du Louvre 32 (Paris).
—2015. 'The production and storage of food in early Iran', *Origini, Preistoria e Protostoria Delle Cilivtà Antiche* XXXVII, 67–72.
—2014. 'The proto-Elamite seal MDP 16 no 198', *Cuneiform Digital Library Notes* 2013/2. http://cdli.ucla.edu/pubs/cdln/php/single.php?id=28
—2013. 'Early writing in Iran', in D.T. Potts (ed), *The Oxford Handbook of Ancient Iran*. Oxford: Oxford University, 233–62

—2012. ‘New and old joins in the Louvre proto-Elamite tablet collection’, Cuneiform Digital Library Notes 2012/6. http://cdli.ucla.edu/pubs/cdln/php/single.php?id=26
— 2010. ‘A Babylonian gang of potters. Reconstructing the social organization of crafts production in the late third millennium BC Southern Mesopotamia’, in L. Kogan et al. *City Administration in the Ancient Near East*.
—2006. ‘Early swine herding’, in B. Lion and C. Michel (eds), *De la domestication au tabou: Le cas des suidés dans le Proche-Orient ancien*. Travaux de la Maison René-Ginouvès: Paris, 31–8.
—2005a. ‘Animal husbandry in Susa during the Proto-Elamite period’, *SMEA* 47, 81–134.
—2005b. ‘Complex graphemes in Proto-Elamite’, *Cuneiform Digital Library Journal* 2005/3, 1–15.
—2002. ‘Proto-Elamite sign frequencies,’ *Cuneiform Digital Library Bulletin*.
Dahl, J. L., L. Hawkins, and K. Kelley. 2018. ‘Proto-Elamite worker categories’, in A. Garcia-Venture (ed), *What’s in a Name? Terminology and Job Categories in the Ancient Near East*. Alter Orient und Altes Testament.
Dahl, J., C. A. Petrie and D.T. Potts. 2013. ‘Chronological parameters of the earliest writing system in Iran’, in Petrie (ed), 353–78.
Damerow, P. 2012. ‘Sumerian beer: the origins of brewing technology in ancient Meopotamia’. *Cuneiform Digital Library Journal* 2012/2. http://cdli.ucla.edu/pubs/cdlj/2012/cdlj2012_002.html
—2006. ‘The origins of writing as a problem of historical epistemology’ *Cuneiform Digital Library Journal* 2006/1, 1–10.
—1996. ‘Food production and social status as documented in Proto-Cuneiform texts’, in P. Wiessner and W. Schiefenhövel (eds), *Food and the Status Quest: An Interdisciplinary Perspective*, Oxford: Berghahn Books, 149–69.
Damerow, P. and R. K. Englund. 1987. ‘Die Zahlzeichensysteme der Archaischen Texte aus Uruk’, in Green and Nissen, 117–65.
—1989a. *Proto-Elamite texts from Tepe Yahya*. Cambridge, Mass: Harvard University Press.
—1989b. ‘Bemerkungen zu den vorangehenden Aufsätzen von A.A. Vajman unter Berücksichtigung der 1987 erschienenen Zeichenliste ATU 2’. *Baghdader Mitteilungen* 20, 133–8.
Deimel, A. 1931. *Sumerische Templewirtschaft den Zeit Urukagina und Seiner Vorgänger*. Rome.
—1923. *Liste der Archaischen Keilschriftzeichen von Fara*. Wissenschaftliche Veröffentlichung der Deutschen Orient-Gesellschaft 40. Leipzig: J. C. Hinrichs.
Delitzch, F. 1897. *Die Entstehung des ältesten Schriftsystems oder Der Ursprung der Keilschriftzeichen*. Leipzig: J.C. Hinrichs.
Delougaz, P. and H. Kantor. 1996. (ed. A. Alizadeh) *Chogha Mish, Volume 1. The First Five Seasons of Excavations 1961–1971*. Parts I texts/Part II Plates. Chicago: Oriental Institute Publications 101.
Desset, F. 2012. *Premières Ecritures Iraniennes: Les Systèmes Proto-Elamite et Elamite Linéaire*. Università degli studi di Napoli ‘L'Orientale’, Dipartimento Asia Africa e Mediterraneo.
De Voogt, A. and J. F. Quack (eds) 2012. *The Idea of Writing: Writing Across Borders*. Brill: Leiden.
Diakonoff, I. M. 1987. ‘Slave-labour vs. non-slave labour: The problem of definition’, in Powell (ed) 1987, 1–4.
—1974a. *Structure of Society and State in Early Dynastic Sumer*. Sources and Monographs of the Ancient Near East 1/3. Los Angeles: Undena Publications.
—1974b. ‘Slaves, helots and serfs in early antiquity’, *Acta Antiqua* 22, 45–78.
—1969. ‘The rise of the despotic state in ancient Mesopotamia’, in I. Diakonoff (ed), Ancient Mesopotamia: Socio-economic history. Moscow: Nauka, 173–203.
Dittman, R. 1986a. *Betrachtungen zur Frühzeit des Südwest-Iran, Regionale Entqicklungen vom 6. bis zum frühen 3. Vorchristlichen Jahrtausend*. Berlin: Dietrich Reimer.
—1986b. ‘Seals, sealings and tablets. Thoughts on the changing patterns of administrative control from the Late-Uruk to the Proto-Elamite Period at Susa’, in Finkbeiner and Röllig (eds)1986, 332–66.
Di Vito, R. A. 1993. *Studies in Third Millennium Sumerian and Akkadian Personal Names: The Designation and Conception of the Personal God*. Revised version of a doctoral dissertation, Harvard University (1986). Studia Pohl, Series Major 16.
Durand, J.–M. 2009. *La Nomenclature des Habits et des Textiles dans les Textes de Mari: Matériaux pour le Dictionnaire de Babylonien de Paris* Vol. 1. Paris.
Earle, T. 1981. ‘Comment on “Evolution of specialized pottery production: A trial model” by Prudence M. Rice, *Current Anthropology* 22 (3): 230–31.
Ebeling, E. 1938. ‘Erim’, *Reallexikon der Assyriologie* 2, 470.
Edzard, D. O. 1998. ‘Name, Namengebung (Onomastik). A. Sumerisch’, in *Reallexikon der Assyriologie und Vorderasiatischen Archäologie* 9/2, 94–103.
—1960. ‘Aspects du contact Suméro-Akkadien’, *Genava* 8, 241–58.

Eichmann, R. 1989. *Uruk. Die Stratigraphie. Grabungen 1912–1977 in den Bereichen ' Eanna ' und ' Anu-Ziqqurrat'*. Mainz: von Zabern.
Emberling, G. 2011. 'Review of G. Algaze, Ancient Mesopotamia at the Dawn of Civilization: The Evolution of an Urban Landscape' 'H-Urban, H-Net Reviews'. June, 2011. https://networks.h-net.org/node/22277/reviews/22976/emberling-algaze-ancient-mesopotamia-dawn-civilization-evolution-urban
Englund, R. K. 2011. 'Accounting in proto-cuneiform', in K. Radner and E. Robsen (eds), *The Oxford Handbook of Cuneiform Culture*. Oxford: Oxford University, 32–50.
—2009. 'The smell of the cage'. *Cuneiform Digitial Library Journal* 2009/4, 1–27.
—2006. 'An examination of the 'textual' witnesses to Late Uruk world systems', in Y. Gong and Y. Chen (eds), *A Collection of Papers on Ancient Civilizations of Western Asia, Asia Minor and North Africa* Oriental Studies Special Issue. Beijing, 1–38.
—2005. Review of J.-J. Glassner (2000/2003) *The Invention of Cuneiform. Writing in Sumer*. Trans. Z. Bahrani and M. van de Mieroop. *Journal of the American Oriental Society* 125/1, 113–16.
—2004a. 'Proto-Cuneiform account-books and journals' in M. Hudson and C. Wunsch (eds), *Creating Economic Order. Record-Keeping, Standardization, and the Development of Accounting in the Ancient Near East.* Bethesda: CDL Press, 23–46.
—2004b. 'The state of decipherment of Proto-Elamite', in S. D. Houston (ed), *The First Writing: Script Invention as History and Process.* Cambridge: Cambridge University Press, 100–49.
—2001. 'Grain accounting practices in Archaic Mesopotamia,' in: J. Høyrup and P. Damerow (eds), *Changing Views on Ancient Near Eastern Mathematics.* Berlin: Max Planck Institute for Human Development and Education, 1–35.
—1998. 'Texts from the Late Uruk Period' in J. Bauer, R. K. Englund, and M. Krebernik (eds), *Mesopotamien Späturuk-Zeit und Frühdynastische Zeit*. Orbis Biblicus et Orientalis 160/1, Freiburg Schweiz: Vandenhoeck & Ruprecht Göttingen, 15–233.
—1996. *Proto-Cuneiform Texts from Diverse Collections*. Berlin: Gebr. Mann.
—1995. 'Late Uruk period cattle and dairy products: Evidence from Proto-Cuneiform sources', *Bulletin of Sumerian Agriculture* 8/2, 33–48.
—1994. *Archaic Administrative Texts from Uruk. The Early Campaigns*. Archaische Texte Aus Uruk 5. Berlin: Mann.
—1992. 'Ur III Sundries', *Acta Sumerologica* 14, 77–102.
—1991. 'Hard work: Where will it get you? Labour management in Ur III Mesopotamia,' *Journal of Near Eastern Studies* 50, 255–80.
—1988. 'Administrative timekeeping in Ancient Mesopotamia' *Journal of the Economic and Social History of the Orient* 31/2, 121–85.
Englund, R. K. and J.–P. Grégroire.1991. *The Proto-Cuneiform Texts from Jemdet Nasr. Vol. 1: Copies transliterations and Glossary*. Berlin: Mann.
Englund, R. K. and H. Nissen. 2005. *Archaische Verwaltungstexte aus Uruk: Vorderasiatisches Museum II*. Berlin: Mann.
Englund, R. K., H. Nissen, and P. Damerow. 1993. *Die Lexikalischen Listen der Archaischen Texte aus Uruk. Archaische Text Aus Uruk* (ATU) 3. Berlin: Mann.
Eyre, C. J. 1987. 'Work and the organization of work in the Old Kingdom', in Powell (ed) 1987, 5–48.
Ezzamel, M. 2012. *Accounting and Order*. New York: Routledge.
Falkenstein, A. 1936. *Archaische Texte aus Uruk*. Ausgrabungen der Deutschen Forschungsgemeinschaft in Uruk-Warka 2. Berlin–Leipzig: Deutsche Forshungsgemeinschaft.
Feinman, G. A. and J. Marcus (eds) 1998. *Archaic States*. Santa Fe: School of American Research.
Finkbeiner, U. (ed) 1991. *Uruk Kampagne 35–37, 1982-1984: Die archäologische Oberflächenuntersuchung (Survey)*. Mainz: Zabern.
—1986. 'Uruk-Warka: Evidence of the Gamdat Nasr Period', in Finkbeiner and Röllig (eds) 1986, 33–56.
Finkbeiner, U. and W. Röllig (eds). 1986. *Ğamdat Nasr: Period or Regional Style?* Wiesbaden: Reichert
Firth, R. 2014. 'Textiles texts of the Lagaš II period', in M. Harlow et al. (eds), *Prehistoric, Ancient Near Eastern and Aegean Textiles and Dress. An Interdisciplinary Anthology*. Oxford: Oxbow Books, 57–73.
Foster, B.1982. *Umma in the Sargonic Period*. Hamden, CT: Archon Press.
—1981. 'A new look at the Sumerian Temple-State', *Journal of the Economic and Social History of the Orient* 24/3, 225–41.
Foster, B. with E. Salgues. 2006. ''Everything except the squeel'. Pigs in early Mesopotamia', in B. Lion and C. Michel (eds), *De la domestication au tabou. Le cas des suidés dans le Proche-Orient ancient*. Paris: De boccard.
Frangipane, M. 2010. *Economic Centralisation in Formative States. The Archaeological Reconstruction of the Economic System in 4th Millennium Arslantepe*. Rome: Sapienza Università di Roma.

—(ed). 2007. *Arslantepe Cretulae: An Early Centralised Administrative System Before Writing*. Roma: CIRAAS.
—1997. 'A 4th millennium temple/palace complex at Arslantepe-Malatya. North-south relations and the formation of early state societies in the northern regions of Greater Mesopotamia', *Paléorient* 23 (1), 45–73.
Frayne, D. 1997. *UR III Periods*. Royal Inscriptions of Mesopotamia, Early Periods 3/2. Toronto: University of Toronto.
—1992. *The Early Dynastic List of Geographical Names*. American Oriental Series 74. New Haven: American Oriental Society.
Friberg, J.1999. 'Counting and accounting in the proto-literate Middle-East: Examples from two new volumes of Proto-Cuneiform texts', *Journal of Cuneiform Studies* 51, 107–57.
—1991. 'Proto-cuneiform area texts from Uruk and Jemdet-Nasr'. Pre-print. Department of Mathematics, Chalmers University of Technology and the University of Göteborg.
—1979. *The Early Roots of Babylonian Mathematics II. Metrological Relationships in Semi-Pictographic Tablets of the Jemdet-Nasr Type, Probably from Uruk-Warka*. Göteborg: Mathematical Institute, University of Technology and the University of Göteborg.
—1978. *The Third Millennium Roots of Babylonian Mathematics I. A Method for Decipherment, Through Mathematical and Metrological Analysis, of Proto-Sumerian and Proto-Elamite Semi-Pictographic Inscriptions*. Göteborg: Mathematical Institute, University of Technology and the University of Göteborg.
Gadotti, A. 2014. *'Gilgamesh, Enkidu and the Netherworld' and the Sumerian Gilgamesh Cycle*. Eränzungsbände zur Zeitschrift für Assyriologie und Vorderasiatische Archäologie 10. Berlin: de Gruyter.
Gamkrelidze, T.V. and V. V. Ivanov. 1995. Trans. J. Nichols. *Indo-European and the Indo-Europeans. I–II*. Trends in Linguistics, Studies and Monographs 80. Berlin: Mouton.
Garcia-Ventura, A. 2016. 'The sex-based division of work versus Intersectionality (Ur III)', in Lion and Michel (eds), 174–92.
—2014. 'Weaving in Ur III Mesopotamia: Women's work?', in K. Droß-Krüpe (ed), *Textile Trade and Distribution in Antiquity*. Wiesbaden: Harrassowitz.
Garfinkle, S. J. 2013. 'Ancient Near Eastern city-states', in P. Fibiger Bang and W. Scheidel (eds), *The Oxford Handbook of the State in the Ancient Near East and Mediterranean*. Oxford: Oxford University.
Gelb, I. J. 1982. 'Terms for slaves in Mesopotamia', in *Societies and Languages of the Ancient Near East. studies in honour of I.M. Diakonoff*. Warminster: Aris and Phillips, 81–98.
—1979. 'Household and family in early Mesopotamia', in E. Lipiński (ed), *State and Temple Economy in the Ancient Near East*. Orientalica Lovaniensia Analecta 5. Leuven: Departement Oriëntalistiek.
—1976. 'Quantitative evaluation of slavery and serfdom' in B. L. Eichler et al. (eds), *Cuneiform Studies in Honor of Samuel Noah Kramer*, 195–207. Kevelaer: Butzon & Bercker.
—1973. 'Prisoners of war in early Mesopotamia', *Journal of Near Eastern Studies* 32, 70–98.
—1972. 'The arua institution', *Revue d'Assyrologie et d'archéologie orientale* 66 (1), 1–32.
—1969. *On the alleged temple and state economies in ancient Mesopotamia*. Studi in onore di Edoardo Volterra 6. Milan: A. Giuffrè, 137–54.
—1965. 'The ancient Mesopotamian ration system', *Journal of Near Eastern Studies*, 24/3. Erich F. Schmidt Memorial Issue, part one, 230–43.
—1963. *A Study of Writing*. Chicago: University of Chicago.
Gelb, I. J., P. Steinkeller and R. M. Whiting, Jr. 1989/1991. *Earliest Land Tenure Systems in the Near East: Ancient Kudurrus*. Oriental Institute Publications 104. Chicago: Chicago University.
Geller, M. J. 2000. 'The landscape of the 'netherworld', in L. Milano et al. (eds), *Landscapes: Territories, Frontiers, and Horizons in the Ancient Near East*. Papers Presented to the XLIV Rencontre Assyriologique Internationale Venezia, 7–11 July 1997. Padova: Sargon, 41–9.
Ghirshman, R. 1934. 'Une tablette Proto-Élamite du Plateau Iranien', *Revue d'Assyriologie et d'archéologie orientale* 31/3. 115–19.
Glassner, J-J. 2003. *The Invention of Cuneiform: Writing in Sumer*. Transl. by Z. Bahrani and M. Van de Mieroop. Baltimore: The Johns Hopkins University Press.
—1999. 'Signes d'écriture et classification: L'exemple des ovi-caprinés', *Topoi* Supplement 2, 467–475.
George, A. R. 2003. *The Babylonian Gilgamesh epic: Introduction, Critical Edition and Cuneiform Texts*, volumes 1–2. Oxford: Oxford University Press.
—1993. *House Most High. The Temples of Ancient Mesopotamia*. Mesopotamian Civilisations 5. Winona Lake: Eisenbrauns.
Goulder, J. 2016. 'Fair exchange: utilization of working animals (and women) in ancient Mesopotamia and modern Africa', *Anthropology of the Middle East* 11/1, 66–84.

Green, M. W. 1989. 'Early Cuneiform', 43–57. W. N. Senner (ed), *The Origins of Writing*. Lincoln, NB: University of Nebraska.
—1986. 'Urum and Uqair' *Acta Sumerologica* 8, 77–83.
—1981. 'The construction and implementation of the Cuneiform writing system', *Visible Language* 15/4, 345–72.
—1980. 'Animal husbandry at Uruk in the archaic period', *Journal of Near Eastern Studies* 39, 1–35.
Green, M. W. and H. J. Nissen. 1987. *Zeichenliste der Archaischen Texte Aus Uruk*. Archaische Texte aus Uruk (ATU) 2. Berlin: Gebr. Mann.
Grégoire, J.-P. 1999. 'The grain-grinding households (é-HAR-HAR) of Southern Mesopotamia at the end of the Third Millennium Before the common era', *Bulletin of the Anglo-Israel Archaeological Society* 17, 7–38.
Hallock, R. T. 1969. *Persepolis Fortification Tablets*. Oriental Institute Publications 92. Chicago: Oriental Institute.
Hansen, D. P. 2003. ''Great Lyre' with bull's head and inlaid front panel', in J. Aruz with R. Walenfels, *Art of the First Cities*. New York: The Metropolitan Museum of Art, 105–7.
Hastorf, C. A. 2017. *The Social Archaeology of Food. Thinking about Eating from Prehistory to the Present*. New York, NY: Cambridge University Press.
Hawkins, L. F. 2015. 'A new edition of the proto-Elamite text MDP 17, 112', *Cuneiform Digital Library Journal* 2015/1, 1–10.
Heimpel, W. 2009. 'Blind workers in Ur III texts', *KASKAL* 6, 43–8.
Helwing, B. 2013. 'Some thoughts on the mode of culture change in the fourth millennium BC Iranian highlands', in Petrie (ed) 2013, 93–106.
Henkelman, W. F. M. and K. Kleber. 2007. 'Babylonian workers in the Persian heartland: Palace building at Matannan in the reign of Cambyses', in Tuplin (ed), *Persian Responses: Political and Cultural Interaction With(in) the Achaemenid Empire*. Swansea: Classic Press of Wales, 163–76.
Hinz, W. and H. Koch. 1987. *Elamisches Wörterbuch*. Berlin: D. Reimer.
Horowitz, W. 1998. *Mesopotamian Cosmic Geography*. Mesopotamian Civilizations 8. Birmingham: Eisenbrauns.
Hopper, K. and T. J. Wilkinson. 2013. 'Population and settlement trends in south-west Iran and neighbouring areas', in Petrie (ed) 2013, 35–49.
Hudson, M. 2015. 'How the organization of labour shaped civilisation's take off', in Steinkeller and Hudson (eds) 2015, 649–64.
Joffe, A. H. 1998. 'Alcohol and social complexity in ancient Western Asia' *Current Anthropology* 39/3, 297–322.
Johnson, J. C. 2015. 'Late Uruk bicameral orthographies and their Early Dynastic Rezeptionsgeschichte', R. Dittmann and G. J. Selz (eds), *It's a Long Way to a Historiography of the Early Dynastic Period(s)* AVO 15. Münster: Ugarit, 169–210.
Jursa, M. and S. Tost. 2014. 'The State and dependent labour in the ancient Near East and in the Graeco-Roman world' (version 02) *Imperium and Officium Research Network Working Papers*.
Khačikjan, M. 1998. *The Elamite Language*. Documenta Asiana IV. Rome: Consiglio Nazionale delle Ricerche Istituto per gli Studi Micenei ed Egeo-Anatolici.
Killen, J. T. 1964. 'The wool industry in Crete in the Late Bronze Age', *The Annual of the British School at Athens* 59, 1–15.
Kirch, P. V. 2010. *How Chiefs Became Kings. Divine Kingship and the Rise of Archaic States in Ancient Hawai'i*. Berkeley: University of California.
Koslova, N. 2013. 'Absence from work in Ur III Umma: reasons and terminology', in S. J. Garfinkle and M. Molina (eds), *From the 21st Century B.C. to the 21st Century A.D. Proceedings of the International Conference on Neo-Sumerian Studies Held in Madrid, 22–24 July 2010*. Winona Lake: Eisenbrauns, 313–32
Krebernik, M. 2013. 'Die Frühe Keilschrift und Ihr Verhältnis zur Sprache', in N. Crüsemann and M. van Ess (eds) *Uruk 5000 Jahre Megacity*. Begleitband zur Ausstellung im Pergamonmuseum — Staatliche Museen zu Berlin in den Reiss-Engelhorn-Museen Mannheim. Michael Imhof, 187–93.
—2007. 'Zur Entwicklung des Sprachbewusst seins im Alten Orient', in C. Wilcke (ed), *Das geistige Erfassen der Welt im Alten Orient*. Wiesbaden: Harrassowitz, 39–61.
—2002 'Zur Struktur und Geschichte des älteren sumerischen Onomastikons', in M. P. Streck and S. Weninger (eds), *Altorientalische und semitische Onomastik*. Veröffentlichungen zur Kultur und Geschichte des Alten Orients und des Alten Testaments 296. Münster: Ugarit, 1–74.
—1998. 'Die Texte aus Fāra und Tell Abū Ṣalābīḫ', in *Mesopotamien. Späturuk-Zeit und Frühdynastische Zeit*. Freiburg Schweiz: Vandenhoeck & Ruprecht Göttingen, 237–414.
—1994. Review of M. W. Green and H. J. Nissen (1987) *Zeichenliste der Archaischen Texte Aus Uruk*

(ATU) 2. *Orientalistische Literaturzeitung* 89/4, 380–5.
—1984. *Die Beschwörungen aus Fara und Ebla: Untersuchungen zur ältesten keilschriftlichen Beschwörungsliteratur.* Texte und Studien zur Orientalistik 2. Zürich : G. Olms.
Krecher, J. 1987. '/ur/ 'Mann', /eme/ 'Frau' und die sumerische Herkunft des Wortes urdu(-d) 'Sklave'' *Die Welt des Orients* 18, 7–19.
—1980. 'Kauf' in E. Ebeling and B. Meissner (eds), *Reallexikon der Assyriologie und Vorderasiatischen Archäologie* 5, 490–540.
Krispijn, Th. J. H. 2016. 'Early silver: Thoughts about the sign KÙ in the earliest documents from Uruk', in K. Kleber and R. Pirngruber (eds), *Silver, Money and Credit. A Tribute to Robartus J. Van der Spek on the Occasion of is 65th Birthday*. Leiden: Nederlands Instituut voor het Nabije Oosten, 1–10.
Lafont, B. 2013. 'State employment of women during the Ur III period', *Second and Third REFEMA Workshops, Tokyo (June 2013) and Carqueiranne (September 2013)*. http://refema.hypotheses.org/976
Lamberg-Karlovsky, C. C. 2001. 'Afterword. Excavations at Tepe Yahya: Reconstructing the past', in C. C. Lamberg-Karlovsky (ed), *Excavations at Tepe Yahya, Iran. 1967–1975. The Third Millennium*, 269–80.
—1989. 'Introduction' in P. Damerow and R. K. Englund (eds) *The Proto-Elamite Texts from Tepe Yahya*. v-xii.
—1978. 'The Proto-Elamites on the Iranian Plateau', *Antiquity* 52/205, 114–20.
—1971. *The Yahya Project*. Iran IX, 182–3.
Lambert, M. 1968a. 'Review of B. Meissner and K. Oberhuber *Die Keilschrift* (1967)' Syria 45, 410–11.
—1968b. 'La Période Présargonique. La vie économique à Shuruppak'. *Sumer* 9, 198–213.
Landsberger, B. 1957. *The Series HAR-ra = hubullu.* Tablets I-IV. Materialen zum Sumerischen Lexikon V. Roma: Pontificum Institutum Biblicum.
Langdon, S. 1928. *Pictographic Inscriptions from Jemdet Nasr Excavated by the Oxford and Field Museum Expedition*. London: Oxford University.
Lang, E. 2016. 'Maids at the grindstone: A comparative study of New Kingdom Egypt grain grinders', *Journal of Lithic Studies* 3/3, 279–89.
Larsen, M. T. 2015. *Ancient Kanesh: A Merchant Colony in Bronze Age Anatolia*. Cambridge: Cambridge University.
Le Brun, A. 1971. 'Recherches stratigraphiques à l'Acropole de Suse, 1969-1971', *CDAFI* 1, 163–216.
Lecompte, C. 2016. 'Representing of women in Mesopotamian lexical lists', in Lion and Michel (eds), 29–56.
—2013. 'Temps, mémoire et évolution des cultures aux époques archaïques: écriture du passé et listes lexicales' L. Feliu et al. (eds), *Time and History in the Ancient Near East. Proceedings of the 56th Rencontre Assyriologique Internationale at Barcelona 26–30 July 2010*, 143–58.
Legrain, L. 1936. *Archaic Seal-Impressions*. Joint Expedition of the British Museum and of the Museum of the University of Pennsylvania to Mesopotamia. London: Oxford University.
Lenzen, H. J. 1974. 'Die architektur in Eanna in der Uruk IV periode', Iraq 36/1, 111–28.
Leshem, D. 2016. 'What did the ancient Greeks mean by Oikonomia?' *Journal of Economic Perspectives* 30/1, 225–31.
Lévi-Strauss, C. 1982. *The Way of the Masks*. Trans. S. Modelski. Seattle: University of Washington.
Limet, H. 1980. 'La condition de l'enfant en Mésopotamie autour de l'an 2000 av. J.C.', in A. Théoderidès, P. Naster and J. Ries (eds), *L'Enfant dans les Civilisations Orientales*. Acta Orientalia Belgica 2. Leuven: Éditions Peeters, 5–17.
—1969. *L'Anthroponymie Sumérienne dans les Documents de la 3e Dynastie d'Ur*. Bibliothèque de la Faculté de philosophie et Letters de l'Université de Liège, Fasc. CLXXX. Paris: Les Belles Lettres.
Lion, B. and C. Michel (eds) 2016. *The Role of Women in Work and Society in the Ancient Near East*. Studies in Ancient Near Eastern Records 13. Boston: de Gruyter.
Liverani, M. 2013. *Imagining Babylon. The Modern Story of an Ancient City*. Boston: de Gruyter.
—2006. (transl. from 1998 Italian) *Uruk. The First City*. London: Equinox.
Lull, V. and R. Micó. 2011. *Archaeology of the Origin of the State. The Theories*. Oxford: Oxford University.
Madjizadeh, Y. 2001. 'Les fouilles d'Ozbaki (Iran). Campagnes 1998–2000', *Paléorient* 27/ 1, 141–5.
Maekawa, K. 1984. 'Cereal cultivation in the Ur III Period', *Bulletin on Sumerian Agriculture* 1: 73–96.
—1980a. 'Animal and human castration in Sumer' Part II: Human castration in the Ur III period', *Zinbun* 16, 1–55.
—1980b. 'Female weavers and their children in Lagash – Pre-Sargonic and Ur III', *Acta Sumerologica* 2, 81–125.
—1979. 'Animal and human castration in Sumer. Part I: Cattle (gu_4) and equids (ANŠE.DUN.GI, ANŠE.BAR X AN) in Pre-Sargonic Lagash', *Zinbun* 15, 95–137.
Mann, M. 2012. *The Sources of Social Power. Vol. 1 A History of Power from the Beginning to AD 1760* (New Edition). Cambridge: Cambridge University.

Manzanilla, L. (ed) 1997. *Emergence and Change in Early Urban Societies*. New York: Plenum.
Manzanilla, L. and M. Rothman (eds). 2016. *Storage in Ancient Complex Societies: Administration, Organization, and Control*. New York: Taylor and Francis Group.
Marchesi, G. and N. Marchetti. 2011. *Royal Statuary of Early Dynastic Mesopotamia*. Mesopotamian civilizations 14. Winona Lake: Eisenbrauns.
Martin, H. P. 2012. 'Šuruppag', *Reallexikon Assyriologie und Vorderasiatischen Archäologie* 13/3–4.
—2001. *The Fara Tablets in the University of Pennsylvania Museum of Archaeology and Anthropology*. Bethesda, MD: CDL.
Matthews, R. 2013. 'The Power of Writing: Administrative Activity at Godin Tepe, Central Zagros, in the Later 4th Millennium BC', in C. A. Petrie (ed), *Ancient Iran and its Neighbours*. The British Institute of Persian Studies Archaeological Monographs Series (III). Oxford: Oxbow, 337–52.
—2003. *The Archaeology of Mesopotamia: Theories and Approaches*. London: Routledge.
—2002. *Secrets of the Dark Mound. Jemdet Nasr 1926–1928*. Iraq Archaeological Reports 6. Warminster: British School of Archaeology in Iraq.
—1993. *Cities, Seals and Writing. Archaic Seal Impressions from Jemdet Nasr and Ur* (MSVO 2). Berlin: Mann.
—1992. 'Jemdet Nasr: The site and the period', *The Biblical Archaeologist* 55/4,196–203.
McCorriston, J. 1997. 'The fiber revolution: Textile extensification, alienation, and social stratification in Ancient Mesopotamia' [and Comments and Reply] Current Anthropology 38/4, 517–49.
Meriggi, P. 1974. *La Scrittura Proto-Elamica. Vol. 1–3*. Rome: Accademia Nazionale dei Lincei.
—1969. 'Altsumerische und Proto-Elamische Bilderschrift', in *Zeitschrift der Deutschen Morgenländischen Gesellschaft* 119/1, 156–63.
Michalowski, P. 2012. 'Emesal (Sumerian dialect)', *The Encyclopedia of Ancient History*. John Wiley and Sons. [online]http://onlinelibrary.wiley.com/doi/10.1002/9781444338386.wbeah24071/abstract;jsessionid=284FA78777C9B780DBBF211B3DD7A36B.f01t04?userIsAuthenticated=false&deniedAccessCustomisedMessage=
—2004. 'An Early Dynastic tablet of ED LU A from Tell Brak (Nagar)', *Cuneiform Digital Library Journal* 3, 1–6.
—1993. 'On the early toponymy of Sumer: A contribution to the study of Early Mesopotamian writing' in A. F. Rainey (ed), *Kinattūtu ša dārâti: Raphael Kutscher Memorial Volume*. Tel Aviv: Institute of Archaeology Tel Aviv University, 119–35.
Michel, C. and M.-L. Nosch. 2010. *Textile Terminologies in the Ancient Near East and Mediterranean Area from the Third to First Millennia BC*. Ancient Textile Series 8. Oxford: Oxbow.
Michel, R. H. and P. E. McGovern. 1993. 'The first wine and beer. Chemical detection of ancient fermented beverages', *Analytical Chemistry* 65/8, 408–13.
Militarëv, A. 1995 'Шумеры и афразийцы', *Vestnik Drevnii Historii* (Journal of Ancient History), 113–26.
Millard, A. R. 1988. 'The bevelled-rim bowls: Their purpose and significance', *Iraq* 50, 49–57.
Miller, N. F. 1985. 'Paleoethnobotanical evidence for deforestation in ancient Iran', *Journal of Ethnobiology* 5, 1–19.
Miller, N., P. Jones, and H. Pittman. 2015. 'Sign and image: Representations of plants on the Warka Vase of Early Mesopotamia'. Unpublished paper, available at the University of Pennsylvania Scholarly Commons, Philadelphia. http://repository.upenn.edu/penn_museum_papers/2
Mittermayer, C. 2009. *Enmerkara und der Herr von Arata: ein ungleicher Wettstreit*. Fribourg: Academic Press.
—2006. *Altbabylonische Zeichenliste der Sumerisch-literarischen Texte*. Fribourg: Orbis Biblicus et Orientalis.
Molina, M. 2011. 'Sklave, Sklaverei' *Reallexikon der Assyriologie und Vorderasiatischen Archäologie* 12, 562–4.
Monaco, S. 2016. *Archaic Cuneiform Tablets from Private Collections* (CUSAS) 31. Bethesda, Maryland: CDL Press.
—2014a. 'Proto-cuneiform and Sumerians', *Rivista degli Studi Orientali* 87, 277–82.
—2014b. *Archaic Bullae and Tablets in the Cornell University Collections* (CUSAS) 21. Bethesda, Maryland: CDL press.
—2012. 'Loan and interest in the archaic texts' *Zeitschrift für Assyriologie und vorderasiatische Archäologie* 102/2, 165–78.
—2007. *The Cornell University Archaic Tablets* (CUSAS) 1. Bethesda, Maryland: CDL press.
Moortgat, A. 1969. *The Art of Ancient Mesopotamia: The Classical Art of the Near East.* London: Phaidon.
Muhs, B. 2016. *The Ancient Egyptian Economy. 3000–30 BCE*. Cambridge: Cambridge University.

Mutin, B. 2013. *The Proto-Elamite Settlement and its Neighbours. Tepe Yahya Period IVC*. American Schools of Prehistoric Research Monograph Series. Oakville: Oxbow.
Nadali, D. and A. Polcaro. 2015. 'Working in Sumer: The new Italian archaeological expedition at Nigin, Southern Iraq, *The Ancient Near East Today* 3/5. http://asorblog.org/2015/05/13/working-in-sumer-the-new-italian-archaeological-expedition-at-nigin-southern-iraq/
Nakassis, D., W. A. Parkinson, and M. L. Galaty. 2011. 'Redistribution in Aegean palatial societies. Redistributive economies from a theoretical and cross-cultural perspective', *American Journal of Archaeology* 115/2, 177–84.
Nicholas, I. M. 1987. 'The function of bevelled-rim bowls: a case study at the TUV Mound, Tal-e Malyan, Iran.' *Paléorient* 13/2, 61–72.
Nissen, H. J. 2016. 'Uruk: Early administration practices and the development of Proto-Cuneiform writing' *Archéo-Nil* 26, 33–48.
—2002. 'Uruk: Key site of the period and key site of the problem', in Postgate (ed) 2002, 1–16.
—1988. *The Early History of the Ancient Near East, 9000–2000 B.C*. Chicago: University of Chicago.
—1987. 'Datierung der archaischen Texte aus Uruk', in Green and Nissen, 21–51.
—1986. 'The archaic texts from Uruk', *World Archaeology* 17, 317–34.
Nissen, H. J., P. Damerow and R. K. Englund. 1993. *Archaic Bookkeeping. Writing and Techniques of Economic Administration in the Ancient Near East*. Trans. Paul Larsen. Chicago: University of Chicago Press.
Nosch, M.–L., H. Koefoed, and E. Andersson (eds). 2013. *Textile Production and Consumption in the Ancient Near East: Archaeology, Epigraphy, Iconography*. Oxford: Oxbow.
Oates, J. 2002. 'Tell Brak: The 4th millennium sequence and its implications' in J. N. Postgate (ed.) 2002, 111–22.
Oates, J. et al. 2007. 'Early Mesopotamian urbanism: A view from the north', *Antiquity* 81/313, 585–600.
Oates, D. and J. Oates. 1997. *Excavations at Tell Brak, vol. II: Nagar in the Third Millennium B.C*., Cambridge: McDonald Institute for Archaeological Research.
Paulette, T. 2015. Grain Storage and Moral Economy in Mesopotamia (3000–2000 BC). PhD Dissertation. University of Chicago.
—2016. 'Grain, storage, and state making in Mesopotamia (3200–2000 BC)', in L. Manzanilla and M. Rothman (eds), *Storage in Ancient Complex Societies*, 85–109. New York: Routledge.
Patterson, T. C. 2005. 'Distribution and redistribution' in J. G. Carrier (ed), *A Handbook of Economic Anthropology*. Cheltenham: Edward Elgar,194–209.
Perkins, A. L. 1949/1977. *The Comparative Archaeology of Early Mesopotamia*. Studies in Ancient Oriental Civilization 25. Chicago: University of Chicago.
Petrie, C. A. 2014.'Iran and Uruk Mesopotamia: Chronologies and Connections in the Fourth Millennium BC', in A. McMahon and H. Crawford (eds), *Preludes to Urbanism. The Late Chalcolithic of Mesopotamia*. Cambridge: McDonald Institute Monographs, 137–57.
—(ed). 2013. *Ancient Iran and Its Neighbours. Local Developments and Long-Range Interactions in the Fourth Millennium BC*. Oxford: Oxbow.
Pientka-Hinz, R. 2011. 'Bunte kühe? Zu den frühesten farbbezeichnungen im alten orient', in G. J. Selz and K. Wagensonner (eds), *The Empirical Dimension of Ancient Near Eastern Studies (Die Empirische Dimension Altorientalischer Forschungen*). London: Global, 325–74.
Pittman, H. 2013. 'Imagery in administrative context: Susiana and the west in the fourth millennium BC', in Petrie (ed) 2013, 293–336.
—2007. 'Chapter III: Fourth Millennium Glyptic at Arslantepe,' in M. Frangipane (ed) 2007, 175–334.
—2003. 'Proto-Elamite glyptic art from operation ABC', in Sumner (ed), 107–9.
—1999. 'Administrative evidence from Hacinebi Tepe: An essay on the local and the colonial', *Paléorient* 25/1, 43–50.
—1993. 'Pictures of administration: the Late Uruk scribe at work', in M. Frangipane et al. (eds), *Between the Rivers and over the Mountains: Archeologica Anatolica et Mesopotamica Alba Palmieri dedicate*. Rome: La Sapienza, 235–45.
—1977. 'Three Cylinder Seals of Ancient Iran', *Journal of Ancient Near Eastern Society of Columbia* 9, 59–65.
Pittman, H. and D. T. Potts. 2009. 'The earliest cylinder seal in the Arabian Peninsula', *Arabian Archaeology and Epigraphy* 20, 109–21.
Polanyi, K. 1957. *Trade and Markets in Early Empires. Economies in History and Theory*. Glencoe: Free Press.
Pollock, S. 2015. 'Ovens, fireplaces and the preparation of food in Uruk Mesopotamia' *Origini* XXXVII, 35–37.

—2012. ‘Politics of food in early Mesopotamian centralized societies’, in *Origini, Preistoria e Protostoria delle Civiltà Antiche: Prehistory and Protohistory of Ancient Civilizations* XXXIV, 153–68.
—2003. ‘Feasts, Funerals, and Fast Food in Early Mesopotamian States’, in T. Bray (ed), *The Archaeology and Politics of Food and Feasting in Early States and Empires*. New York: Kluwer Academic Press, 17–38.
—1999. *Ancient Mesopotamia. The Eden that Never Was*. Cambridge: Cambridge University Press.
—1992. ‘Bureaucrats and managers, peasants and pastoralists, imperialists and traders: research on the Uruk and Jemdet Nasr periods in Mesopotamia’, *Journal of World Prehistory* 6, 297–336.
Pollock, S. (ed) 2015. *Between Feasts and Daily Meals. Towards an Archaeology of Commensal Spaces*. Berlin Studies of the Ancient World 30.
Pollock, S. and Bernbeck, R. 2000. ‘And they said, let us make gods in our image: Gendered ideologies in Ancient Mesopotamia’, in A. E. Rautman (ed), *Reading the Body: Representations and Remains in the Archaeolgical Record*. Philadelphia: University of Pennsylvania, 150–64.
Pomponio, F. and G. Visicato. 1994. *Early Dynastic Administrative Tablets of Šuruppak*. Naples: Istituto Universitario Orientale di Napoli.
Porada, E. 1947. *Mesopotamian Art in Cylinder Seals of the Pierpont Morgan Library*. New York: Pierpoint Morgan Library.
Potts, D. T. 2016 (second edition). *The Archaeology of Elam: Formation and Transformation of an Ancient Iranian State.* Cambridge World Archaeology. Cambridge: Cambridge University.
—2014a. *Nomadism in Iran: From Antiquity to the Modern Era.* Oxford: Oxford University.
—2014b. ‘On some early equid signs at Susa’, in C. C. Lamberg-Karlovsky and G. Benito (eds), ‘*My Life is Like the Summer Rose’ Maurizio Tosi e l’Archeologia Come Modo di Vivere. Papers in Honour of Maurizio Tosi for his 70th Birthday*. BAR International Series 2690. Oxford: Archaeopress.
—2012. *A Companion to the Archaeology of the Ancient Near East, Volume 1*. Oxford: Wiley-Blackwell.
—2011. ‘The *abbuttu* and the alleged Elamite “slave hairstyle’, in L. Vacín (ed.) 2011, 183–94.
—2009 ‘Bevel-rim bowls and bakeries: Evidence and explanations from Iran and the Indo-Iranian borderlands’, *Journal of Cuneiform Studies* 61, 1–23.
—2004. ‘Exit Aratta: Southeastern Iran and the Land of Marhashi’ *Nāme-ye Irān-e Bāstān* 4/1, 1–11.
—1997. *Mesopotamian Civilization. The Material Foundations.* London: Athlone.
Postgate, J. N. 1992. *Early Mesopotamia. Society and Economy at the Dawn of History*. London: Routledge.
—(ed) 2002. *Artefacts of Complexity. Tracking the Uruk in the Near East*. Iraq Archaeological Reports 5. Warminster: British School of Archaeology in Iraq.
Powell, M. A. 1994. ‘Metron Ariston: Measure as a tool for studying beer in ancient Mesopotamia’ in L. Milano (ed), *Drinking in Ancient Societies: History and Culture of Drinks in the Ancient Near East. Papers of a Symposium held in Rome, May 17-19, 1990*. Padua: Sargon, 91–119.
—1989. ‘Maße und Gewichte’ in D. O. Edzard (ed.), *Reallexikon der Assyriologie und Vorderasiatischen Archäologie* 7, 457–517.
—(ed). 1987. *Labour in the Ancient Near East*. American Oriental Society Monograph Series. New Haven: American Oriental Society.
Prentice, R. 2010. *The Exchange of Goods and Services in Pre-Sargonic Lagash*. Alter Orient und Altes Testament (AOAT) 368. Münster: Ugarit.
Rapp, R. 1977. ‘Gender and class: An archaeology of knowledge concerning the origin of the state’, *Dialectical Anthropology* 2, 309–16.
Reid, N. 2014. *Slavery in early Mesopotamia from Late Uruk until the fall of Babylon in the Longue Durée*. Doctoral dissertation, Oxford University.
Renger, J. 2016.‘Weber—Polanyi—Sraffa: A consideration of modes of production’, in G. Bartoloni and M. Giovanna Biga (eds), *Not Only History. Proceedings of the Conference in Honor of Mario Liverani*. Winona Lake: Eisenbrauns, 15–33.
—2007. ‘Economy of ancient Mesopotamia: A general outline’, in G. Leick (ed) *The Babylonian World*. London: Routledge, 187–196.
—1995. ‘Institutional, communal and individual ownership or possession of arable land in ancient Mesopotamia from the end of the fourth to the end of the first millennium B.C’, *Chicago Kent Law Review* 71, 269–319.
—1975. ‘HAR-tu’, *Reallexikon der Assyriologie und Vorderasiatischen Archäologie* 4, 440.
Reusch, K. 2013. ‘That which was missing. The archaeology of castration’. Doctoral dissertation, Oxford University.
Richardson, S. 2017. ‘Goodbye, Princess: Iltani and the DUMU.MUNUS LUGAL’, *Journal of Cuneiform Studies* 69, 67–108.
—2015.‘Building Larsa: Labour value, scale and scope-of-economy in ancient Mesopotamia’, in Steinkeller and Hudson (eds) 2015, 237–328.

Roach, K. J. 2008. *The Elamite Cylinder Seal Corpus, c. 3500–1000 BC*. Doctoral dissertation, University of Sydney.
Robertson, J. S. 2004. 'The possibility and actuality of writing' in S. D. Houston (ed), *The First Writing: Script Invention as History and Process*. Cambridge: Cambridge University, 16–38.
Ross, J. C. 'Art's role in the origins of writing: The seal-carver, the scribe, and the earliest lexical texts', in B. A. Brown and M. H. Feldman (eds), *Critical Approaches to Ancient Near Eastern Art*. Boston: de Gruyter, 295–318.
Rothman, M. S. (ed) 2001. *Uruk Mesopotamia & Its Neighbours. Cross-cultural Interactions in the Era of State Formation*. Oxford: School of American Research.
Rougemont, F. 2014. 'Sheep rearing, wool production, and management in Mycenean written documents', in C. Breniquet and C. Michel (eds) 2014, 340–70.
Routledge, B. 2014. *Archaeology and State Theory. Subjects and Objects of Power*. New York: Bloomsbury Academic.
Rova, E. 1994. *Ricerche sui Sigilli a Cilindro Vicino-Orientali del Periodo di Uruk/Jemdet Nasr*. Roma: Istituto per l'Oriente C. A. Nallino.
Rubio, G. 2005. 'On the linguistic landscape of early Mesopotamia', in W. H. Van Soldt (ed), *Ethnicity in Ancient Mesopotamia. Papers Read at the 48th Recontre Assyriologique Internationale, Leiden, 1-4 July 2002*. Leiden: Nederlands Instituut voor het Nabije Oosten, 316–32.
—1999. 'On the alleged 'pre-Sumerian substratum', *Journal of Cuneiform Studies* 51, 1–16.
Saeedi, S. 2016. 'New Perspectives on the proto-Elamite territory' *Talk Delivered at ASOR 2016, 18th November, 2016*, *San Antonio, Texas.*
Sahlins, M. 1972. *Stone Age Economics*. Chicago: Aldhine-Atherton.
Sallaberger, W. and W. Pruß. 2015. 'Home and work in Early Bronze Age Mesopotamia: 'Ration lists' and 'private houses' at Tell Beydar/Nabada', in Steinkeller and Hudson (eds) 2015, 69–136.
Sallaberger, W. 2014. 'Women at Beydar' in L. Milano et al. (eds) 2014, *Third Millennium Cuneiform Texts from Tell Beydar (Seasons 1996-2002).* Subartu XII, Turnhout: Brepols, 43–9.
—1996. 'Grain accounts: Personnel lists and expenditure documents', in F. Ismail et al. (eds) 1996, *Administrative Documents from Tell Beydar (1993–1995)*. Subartu 2. Turnhout: Brepols.
Sarzyńska, K. 2002. *Sheep Husbandry and Production of Wool, Garments and Cloths in Archaic Sumer*. Warsaw: Agade.
—1997. *Sumerica. Prace sumeroznawcze*. Philologia Orientalis 3. Warsaw: Dialog.
—1993. 'Offerings for the goddess Inana in Archaic Uruk'. *Revue d'Assyriologie et d'archéologie orientale* 87/1, 7–28.
—1988. 'Records of garments and cloths in archaic Uruk/ Warka', *Altorientalische Forschungen* 15/2, 220–30.
Scheil, V. 1905. 'Documents archaïques en écriture proto-elamite', in *Textes Élamites-Sémitiques*. Mémoires de la Délégation en Perse 6 (=MDP 6). Paris: Ernest Leroux.
—1935. *Textes de Comptabilité Proto-Elamite.* Mémoires de la Délégation en Perse 26 (=MDP 26). Paris: Librairie Ernest Leroux.
Schmandt-Besserat, D. 1992. *Before Writing: From Counting to Cuneiform*. Austin: University of Texas Press.
Schmidt, K. 1982. 'Zur Verwendung der mesopotamischen 'Glockentöpfe', *Archäologisches Korrespondenzblatt* 12, 317–19.
Schneider, A. 1920. *Die Anfänge der Kulturwirtschaft: die sumerische Tempelstadt*. Essen: G. D. Baedeker.
Schwartz, G. 2001. 'Syria and the Uruk Expansion', in Rothman (ed) 2001, 233–64.
Scott, J. C. 2017. *Against the Grain. A Deep History of the Earliest States*. New Haven: Yale University Press.
Sherratt, A. 1981. 'Plough and pastoralism. Aspects of the secondary products revolution', in I. Hodder et al. (eds) 1981, *Pattern of the Past*. Cambridge: Cambridge University, 261–306.
Silvestri, D., L. Tonelli, and V. Valeri. 1990. *The Earliest Scripts of Uruk (Syntactic Analysis*). Naples: Istituto universitario orientale.
Sjöberg, Å. 1998. The Sumerian Dictionary of the University of Pennsylvania Museum, Volume 1 A part III. Philadelphia: The Babylon Section of the University Museum.
—1973. 'Miscellaneous Sumerian hymns', *Zeitschrift für Assyriologie und Vorderasiatische Archäologie* 63/1, 1–55.
Smith, M. E. 2009. 'V. Gordon Childe and the Urban Revolution: A historical perspective on a revolution in urban studies', *The Town Planning Review* 80/1, 3–29.
Smith, R. T. 1984. 'Anthropology and the concept of social class', *Annual Review of Anthropology* 13, 467–94.

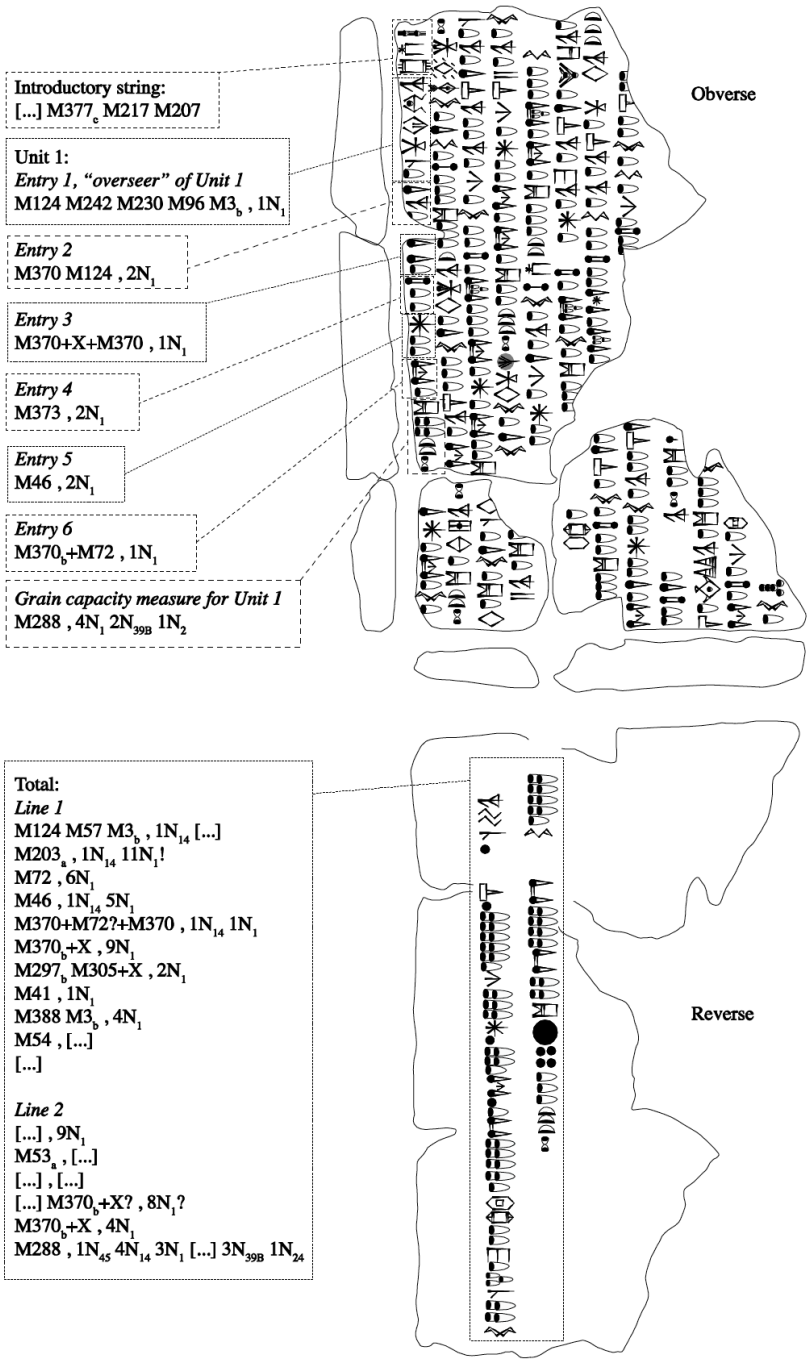
Stein, G. 2014. 'Economic dominance, conquest, or interaction among equals? Theoretical models for understanding culture contact in early Near Eastern complex societies', M. Hossein Azizi Kharanaghi et al. (eds), *Proceedings of the International Conference of Young Archaeologists*. Tehran: University of Tehran, 51–64.
—2001. 'Understanding ancient state societies in the old world', in G. M. Feinman and T. D. Price (eds) *Archaeology at the Millennium. A Sourcebook*. New York: Plenum, 353–79.
—1999. 'The Uruk Expansion: Northern Perspectives from Hacınebi, Hassek Höyük, and Gawra' (thematic issue) *Paléorient* 25 (1).
—1990. 'On the Uruk Expansion', *Current Anthropology* 31/1, 66–9.
Steinkeller, P. 2015. 'Introduction. Labour in the early states: An early Mesopotamian perspective', in Steinkeller and Hudson (eds) 2015, 1–36.
—2013a. 'An archaic "prisoner plaque" from Kiš', *Revue d'Assyriologie et d'Archéologie Orientale* 107, 131–57.
—2013b. 'Corveé labour in Ur III times', S. J. Garfinkle and M. Molina (eds), *From the 21st Century BC to the 21st Century AD. Proceedings of the International Conference on Neo-Sumerian Studies Held in Madrid, July 22-24, 2010*. Winona Lake: Eisenbrauns, 347–424.
—2007. 'On sand dunes, mountain ranges and mountain peaks', in M.T. Roth, W. Farber, M.W. Stolper and P. von Bechtolsheim (eds), *Studies Presented to Robert D. Biggs*, 219–32.
—2004. 'Towards a definition of private economic activity in third millennium Babylonia', in R. Rollinger and C. Ulf (eds), *Commerce and Monetary Systems in the Ancient World: Means of Transmission and Cultural Interaction: Proceedings of the Fifth Annual Symposium of the Assyrian and Babylonian Intellectual Heritage Project, held in Innsbruck, Austria, October 3rd – 8th 2002*, 91–114.
—2002. 'Archaic city seals and the question of early Babylonian unity' in T. Abusch (ed), *Riches Hidden in Secret Places. Ancient Near Eastern Studies in Memory of Thorkild Jacobsen.* Winona Lake: Eisenbrauns, 249–57.
—1999. 'On rulers, priests and sacred marriage. Tracing the evolution of early Sumerian kingship', in K. Watanabe (ed), *Priests and Officials in the ancient Near East*. Heidelberg: Universitätsverlag C. Winter, 103–37.
—1995a. 'Review of Green and Nissen' (1987) *Zeichenliste der Archaischen Texte Aus Uruk* (ATU) 2. *Bibliotheca Orientalis* 52, 690–713.
—1995b. 'Sheep and Goat Terminology in Ur III Sources from Drehem', *Bulletin on Sumerian Agriculture* 8, 49–70.
—1993a. 'Observations on the Sumerian personal names in Ebla sources and on the onomasticon of Mari and Kish', in M. Cohen et al. (eds), *The Tablet and the Scroll. Near Eastern Studies in Honor of William W. Hallo*. Bethesda: CDL Press, 236–45.
—1993b. 'Early political development in Mesopotamia and the origins of the Sargonic Empire', in M. Liverani (ed), *Akkad: The First World Empire: Structure, Ideology, Traditions*. Padova: Sargon.
—1990. 'More on LÚ.SU.(A) = Šimaški', *Nouvelles Assyriologiques Brèves et Utilitaires* (N.A.B.U)1990/1: no. 13.
—1989. *Sale Documents of the Ur III Period*. Freiburger altorientalische Studien 17. Stuttgart: Franz Steiner.
—1988. 'Grundeigentum in Babylonien von Uruk IV zur frühdynastischen Period II', *Das Grundeigentum in Mesopotamien, Jahrbuch für Wirtschaftsgeschichte* (Berlin: Akademie), 11–27.
—1987. 'The foresters of Umma. Toward a definition of Ur III labour', in M.A. Powell (ed) 1987, 73–115.
—1980. 'On the reading and location of the toponyms ÚR×Ú.KI and A.ḪA.KI', *Journal of Cuneiform Studies* 32/1, 23–33.
Steinkeller, P., M. A. Littauer, and J. H. Crouwel. 1990. 'Ceremonial threshing in the ancient Near East', *Iraq* 52, 15–23.
Steinkeller, P. and M. Hudson (eds). 2015. *Labour in the Ancient World*. International Scholars Conference on Ancient Near Eastern Economics 5. Dresden: Islet.
Stol, M. 1994. 'Beer in Neo-Babylonian times', L. Milano (ed), *Drinking in Ancient Societies. History and Culture of Drinks in the Ancient Near East*. Padova: Sargon, 155–83.
Stolper, M. 1985. 'Proto-Elamite texts from Tall-I Malyan'. *KADMOS: Zeitschrift für vor- und frühgriechische Epigraphik* 24/1–2, 1–12.
Studevent-Hickman, B. 2008. 'The workforce at Umma: Some new questions', in S. J. Garfinkle and J. C. Johnson (eds), *The Growth of an Early State in Mesopotamia: Studies in Ur III Administration*. Biblioteca del Próximo Oriente Antiguo 5. Madrid: Consejo Superior de Investigaciones Científicas. 141–7.
Strommenger, E. 1980. 'The chronological division of the archaic levels of Uruk-Eanna VI to III/II: Past and Present', *American Journal of Archaeology* 84/4, 479–87.

Struve, V. V. 1984. Onomastika rannedinasticheskogo Lagasha: izbrannye Trudy. Moskva: Izdvo 'Nauka', Glav. red. vostochnoĭ litry.
Sumner, W. M. 2003. *Early Urban Life in the Land of Anshan: Excavations at Tal-e Malyan in the Highlands of Iran*. University Museum Monograph 113. Philadelphia: University of Pennsylvania Museum of Archaeology and Anthropology.
—1986. 'Proto-Elamite civilization in Fars', in Finkbeiner and Röllig (eds) 1986, 199–211.
Sürenhagen, D. 1985. 'Einige kulturelle Kontakte zwischen Arslantepe VI A und den frühsumerisch-hochprotoelamischen Stadtkulturen', in M. Liverani, A. Palmieri and R. Peroni (eds) *Studi di Paletnologia in onore di Salvatore Puglisi.* Rome : Università di Roma 'La Sapienza', Dipartimento di Scienze Storiche Archeologiche e Antropologiche dell' Antichita, 229–36.
Suter, C. 2014. 'Human, divine, or both? The Uruk Vase and the problem of ambiguity in early Mesopotamian visual arts', in M. Feldman and B. Brown, *Critical Approaches to Ancient Near Eastern Art*. Berlin: de Gruyter, 545–68.
Thureau-Dangin, F. 1929. 'Wardum', *Archiv Orientální* 1, 271–2.
Trigger, B. 2006. (1st edition 1989) *A History of Archaeological Thought*. Cambridge: Cambridge University.
—2004. 'Writing systems: a case study in cultural evolution', in Housten (ed), 39–68.
Tuplin, C. 2008. 'Taxation and death: Certainties in the Persepolis Fortification archive?', in Briant, P. et al. (eds), *L'Archive des Fortifications de Persépolis: Etat des Questions et Perspectives de Recherches: Actes du Colloque Organisé au Collège de France par la "Chaire d'Histoire et Civilisation du Monde Achéménide et de l'Empire d'Alexandre" et le "Réseau International d'Etudes et de Recherches Achéménides" (GDR 2538 CNRS), 3-4 novembre 2006. Persika* 12. Paris: De Boccard, 317–86.
Twiss, K. C. 2007. *The Archaeology of Food and Identity*. Centre for Archaeological Investigations. Carbondale: Southern Illinois University.
Uchitel, A. 2002. 'Women at work: weavers of Lagash and spinners of San Luis Gonzaga' in S. Parpola and R. M. Whiting (eds), *Rencontre Assyriologique Internationale (47th): Sex and Gender in the Ancient Near East*. Helsinki: Neo-Assyrian Text Corpus Project, 621–32.
—1984. 'Women at Work'. *Historia/Zeitschrift für alte Geschichte* 33, 257–82.
Ur, J. A., P. Karsgaard, and J. Oates. 2003. 'Early Urban Development in the Near East', *Science* 317 (5842), 1188.
Vacín, L. (ed). 2011. *U4 DU11-GA NI SÁ MU-NI-IB-DU11. Ancient Near Eastern Studies in Memory of Blahoslav Hruška.* Dresden: Islet.
Vaiman, A. A. 1990. 'Die Deutung einiger Zeichen in proto-sumerischen Sklaven- und Sklavinnenlisten', *Baghdader Mitteilungen* 21, 116–23.
—1989. [Original 1972 in Russian, Trans. T. Götzelt]. 'Die Bezeichnung von Sklaven und Sklavinnen in der protosumerischen Schrift', *Baghdader Mitteilungen* 20, 121–33. Original published in *Vestnik Drevnei Istorii/Journal of Ancient History* 128 (1974), 138–48.
—1974. 'Über die protosumerische Schrift', *Acta Antigua* 22, 15–27.
Van de Mieroop, M. 1993. 'Sheep and goat herding according to the Old Babylonian texts from Ur'. *Bulletin on Sumerian Agriculture* 7, 161–82.
Van Ess, M. 2015. 'Absolute chronology of the Uruk and Jemdet Nasr Periods at Uruk, Southern Mesopotamia. The interpretation of additional 14C Samples. *Zeitschrift für Orient-Archäologie* 8, 11–37.
Velduis, N. 2014. *History of the Cuneiform Lexical Tradition*. Münster: Ugarit.
—2006. 'How did they learn cuneiform? Tribute/word list C as an elementary exercise', in P. Michalowski, P. and N. Veldhuis (eds.), *Approaches to Sumerian Literature in Honour of Stip (H. L. J. Vanstiphout)*. Leiden: Brill, 181–200.
Visicato, G. 1995. *The Bureaucracy of Šuruppak: Administrative Centres, Central Offices, Intermediate Structures and Hierarchies in the Economic Documentation of Fara*. Münster: Ugarit.
Waetzoldt, H. 2010. 'The colours and variety of fabrics from Mesopotamia during the Ur III period (2050 BC)', in C. Michel and M.-L. Nosch (eds), 201–9.
—1988. 'Die Situation der Frauen und Kinder anhand ihrer Einkommensverhältnisse zur Zeit der III. Dynastie von Ur', *Altorientalische Forschungen* 15/1, 30–44.
—1987. 'Compensations of craft workers and officials in the Ur III period' in M. A. Powell (ed), *Labour in the ancient Near East*. American Oriental Series 68. New Haven: American Oriental Society, 117–41.
—1972. *Untersuchungen zur Neusumerischen Textilindustrie*. Studi Economici e Tecnologici-1. Rome: Centrol per le Antichità dell'Arte del Vicino Oriente.
Wagensonner, K. 2016. *Die frühen lexikalischen Texte und ihr Aufbau Zu den archaischen und frühdynastischen Wortlisten, der Anordnung ihrer Einträge und den Klassifikationssystemen in den frühen Phasen der Keilschrift.* Doctoral dissertation, University of Vienna.

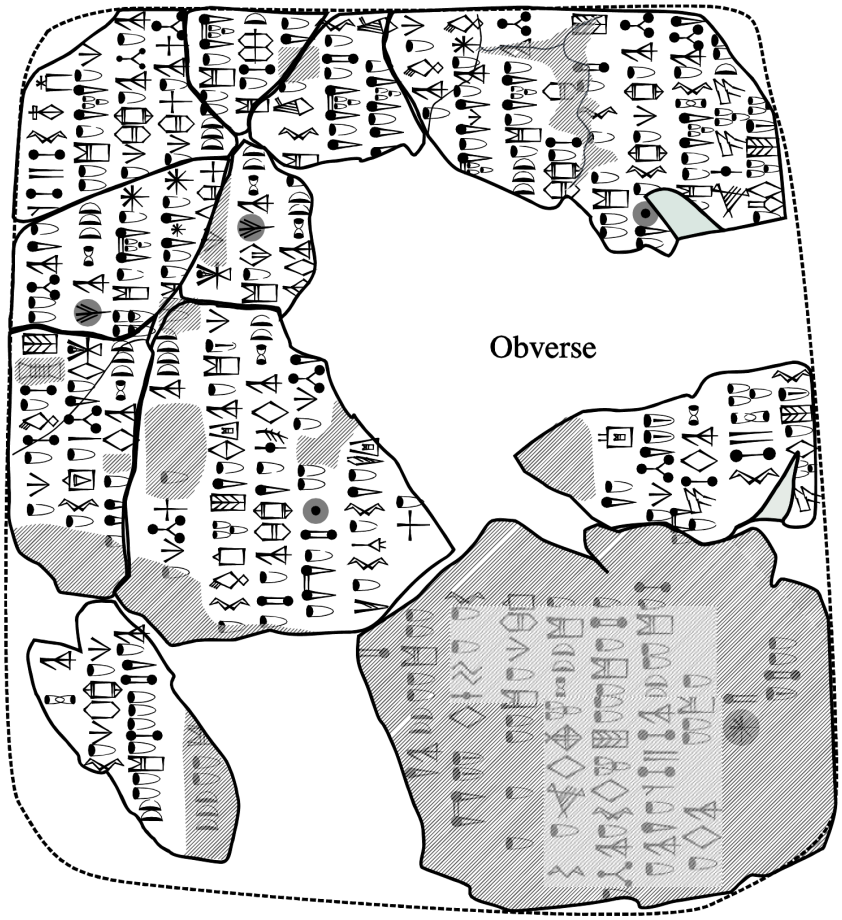
—2015. ‘Vessels and other containers for the storage of food according to the early lexical record’, in M. Frangipane (ed), 15–27.
—2010. ‘Early lexical lists revisited. Structures and classification as a mnemonic device’, in L. Kogan, N. Koslova, S. Loesov and S. Tishchenko (eds), *Language in the Ancient Near East. Proceedings of the 53e Rencontre Assyriologique Internationale, Vol. 1, Part 1*. Babel und Bibel 4/1. Winona Lake: Eisenbrauns, 285–310.
—2012. ‘Early lexical lists and their impact on economic records. An attempt of correlation between two seemingly different kinds of data-sets’, in G. Wilhelm (ed), *Organization, Representation, and Symbols of Power in the Ancient Near East. Proceedings of the 54th Rencontre Assyriologique Internationale at Würzburg 20–25 July 2008*. Winona Lake: Eisenbrauns, 805–17.
Weiss, H. and T. C. Young. 1973. ‘The merchants of Susa: Godin V and plateau-lowland relations in the late fourth millennium B.C.’ *Iran* 13, 1–17.
Wencel, M. 2015. ‘‘The place of the native lords’: Notes on gi$_7$, ki-en-gi and the DN ^{d}nin-ki-en-gi-ŠE$_3$’, *Nouvelles Assyriologiques Brèves et Utilitaires* 2015/4, 149–51.
—(forthcoming). *Towards an absolute chronology of early Mesopotamia: A radiocarbon perspective*, Doctoral dissertation, Oxford University.
Wengrow, D. 2008. ‘Prehistories of commodity branding’, *Current Anthropology* 49/1, 7–34.
Westenholz, A. 1999. ‘The Old Akkadian Period: History and Culture’, in P. Attinger et al. (eds), *Mesopotamien: Akkade-Zeit und Ur III-Zeit*. Orbis Biblicus et Orientalis 160/3. Göttingen: Vandenhoeck & Ruprecht, 17–105.
Westenholz, J. G. 1998. ‘Thoughts on esoteric knowledge and secret lore’, in J. Prosecký (ed) *Intellectual Life of the Ancient Near East. Papers Presented at the 43rd Rencontre Assyriologique International, Prague, July 1-5, 1996.* Prague: Oriental Institute, 451–62.
Wilcke, C. 2005. ‘ED LÚ und die Sprachen(n) der archaischen Texte’ in W. H. van Soldt, R. Kalvelagen and D. Katz (eds), *Ethnicity in Ancient Mesopotamia*. Leiden: Nederlands Instituut voor het Nabije Oosten, 430–45.
Woods, C. 2015. ‘Contingency tables and economic forecasting in the earliest texts from Mesopotamia’, in P. Delnero and J. Lauinger (eds), *Texts and Contexts. The Circulation and Transmission of Cuneiform Texts in Social Space*. Studies in Ancient Near Eastern Records 9. Boston: De Gruyter, 121–42.
Wright, H. T. 2001. ‘Cultural action in the Uruk world’, in M. Rothman (ed) 2001, 123–47.
Wright, H. T. and G. Johnson. 1985. ‘Regional perspectives on southwest Iranian state development’, *Paléorient* 11, 25–30.
—1975. ‘Population, exchange, and early state formation in southwestern Iran’, *American Anthropologist* 77, 267–89.
Wright, K. I. 2007. ‘Women and the emergence of urban society in Mesopotamia’, in S. Hamilton et al. (eds), *Archaeology and Women. Ancient & Modern Issues*, 199–245.
Wright, R. P. 2013. ‘Sumerian and Akkadian industries: crafting textiles’, in H. Crawford (ed) 2013, 395–418.
—1996. *Gender and Archaeology*. Philadelphia: University of Philadelphia.
Wu, Y. 1998. ‘The slave hairstyle: Elamite and other foreign hairstyles in the 3rd and 2nd millennia’ *Journal of Ancient Civilizations* 13, 131–8.
Yoffee, N. 2004. *Myths of the Archaic State: Evolution of the Earliest Cities, States, and Civilizations*.
—1995. ‘Political economy in early Mesopotamian states’, *Annual Review of Anthropology* 24, 281–311.
Zagarell, A. 1986. ‘Trade, women, class and society in Ancient Western Asia’ (and responses), *Current Anthropology* 30/5, 415–30.
Zarins, J. (with the assistance of R. Houser). 2014. *The Domestication of Equidae in Third-Millennium BCE Mesopotamia*. Bethesda: CDL Press.
—1978. ‘The domesticated equidae of third millennium B.C. Mesopotamia’, *Atlal* 3, 73–8.
Zeder, M. 1994.‘Of kings and shepherds: Specialized animal economy in Ur III Mesopotamia’ in G. Stein and M. Rothman (eds), *Chiefdoms and Early States in the Near East: the Organizational Dynamics of Complexity*
Zsolnay, I. and J. G. Westenholz. ‘Categorizing men and masculinity in Sumer’, in I. Zsolnay (ed) *Being a Man. Negotiating Ancient Constructs of Masculinity*. London: Routledge, 12–42.

Appendix: Proto-Elamite texts including women and children

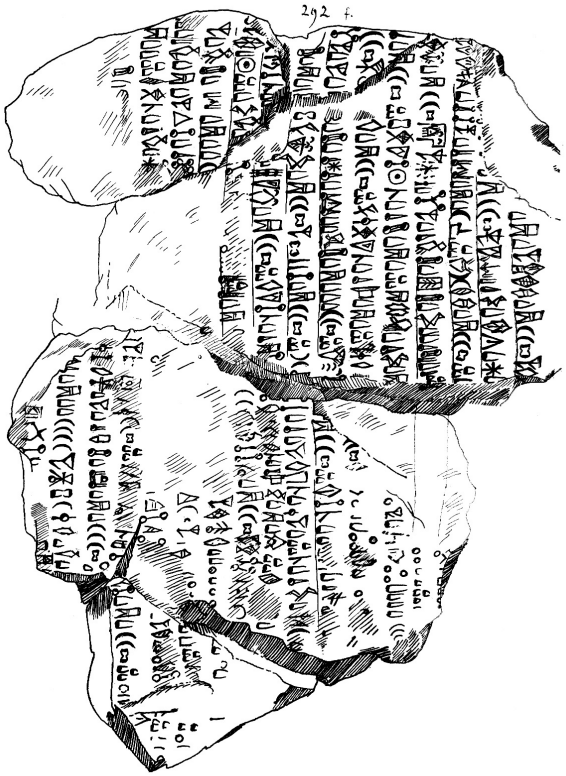
Very long ration 1 text from Susa
MDP 6, 246+ 269+ 302+ 332
(Dahl et al. 2018)



Very long ration text 2 from Susa
MDP 6, 316 + 322 +324 + MDP 26S, 335 + Sb 15247
(Dahl et al 2018)



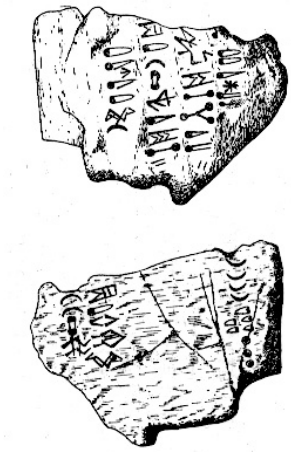
Very long ration text 3 from Susa
MDP 17, 292
(Scheil 1923)



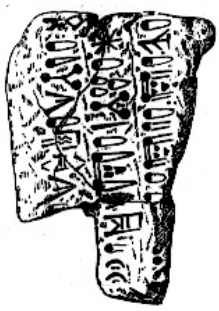
MDP 6, 287
(Scheil 1905)

Possible 'primary document' of a type that could feed into the complex ration accounts

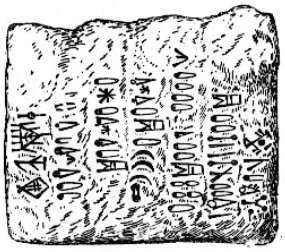
Fragments of long ration texts from Susa with M72 and/or M370$_{(b)}$+ x



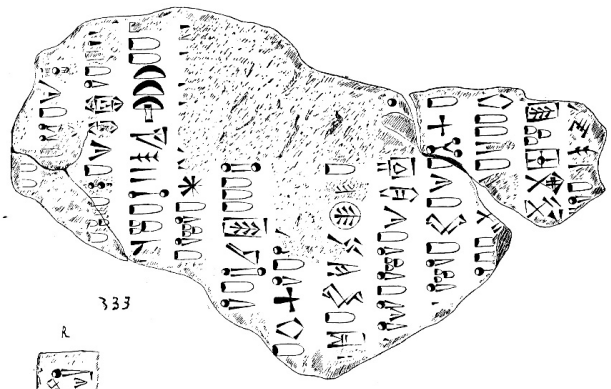
i) MDP 6, 311

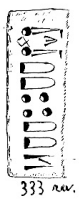


ii) MDP 6, 315



iii) MDP 6, 343

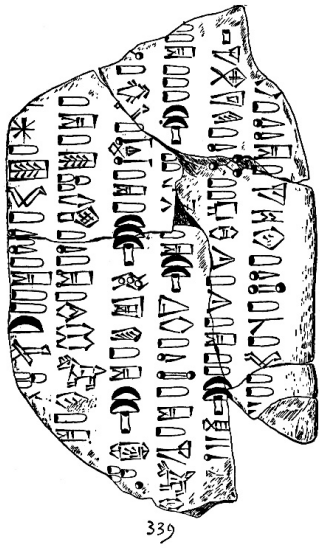




iv) MDP 26S, 333

v) MDP 17, 234

vi) MDP 6, 5007

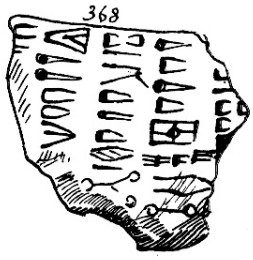


vii) MDP 26S, 339

Fragments of long ration texts from Susa with M72 but no M370$_{(b)}$+ x children

*xlv) MDP 6 243

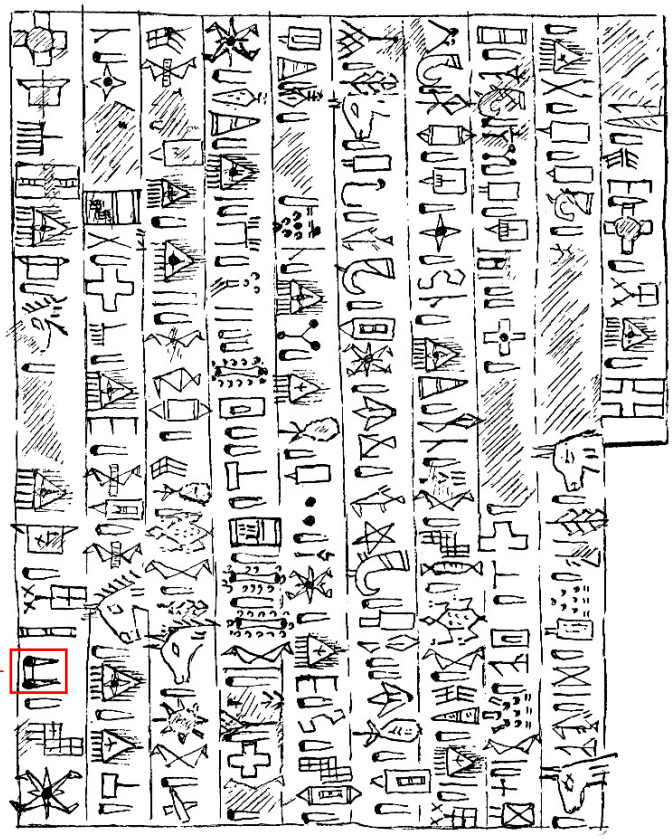
viii) MDP 26S, 5218



ix) MDP 17, 368

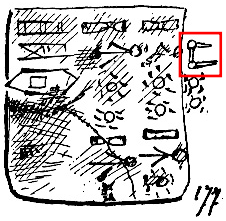
x) SE 121 / P009438
*contains M370 but no M370 complex graphemes

$M370_b$ with uncertain use



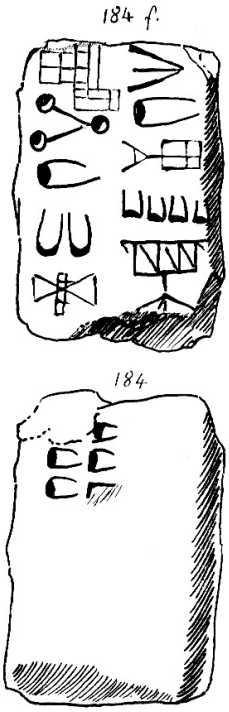
$M370_b$

xi) MDP 26, 71



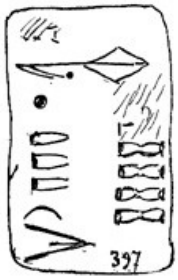
xii) MDP 26, 177

Short texts from Susa including M72

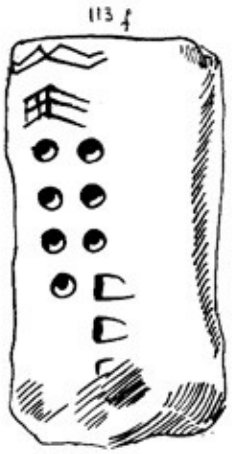


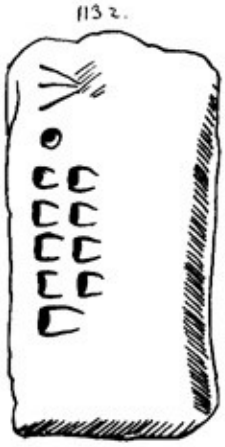
xiii) MDP 17, 184

xiv) MDP 26, 191

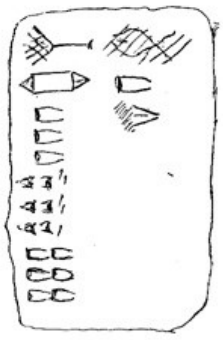


xv) MDP 26, 397

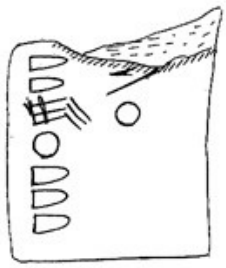


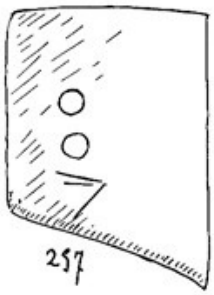


xvi) MDP 17, 113

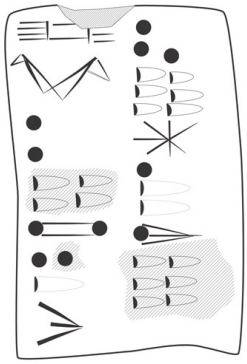


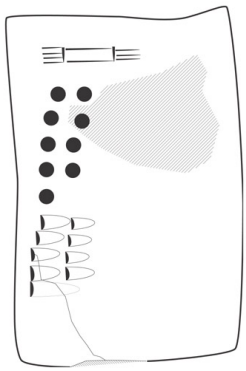
xvii) MDP 26, 415





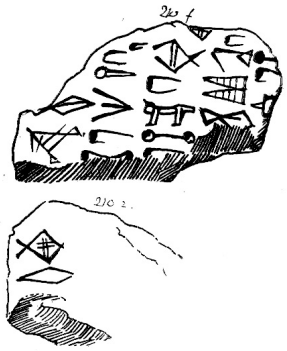
xviii) MDP 26, 257



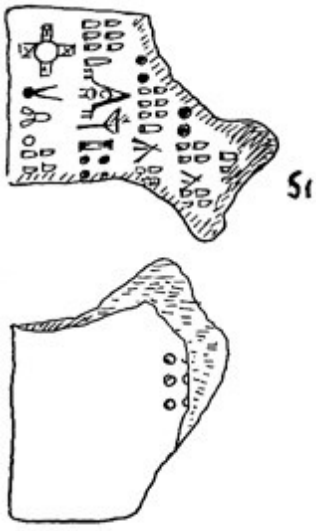


xix) SE 124

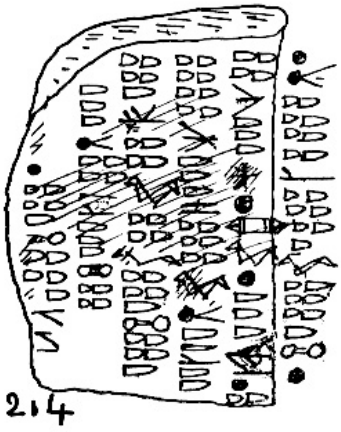
Accounts from Susa including M72 (1)



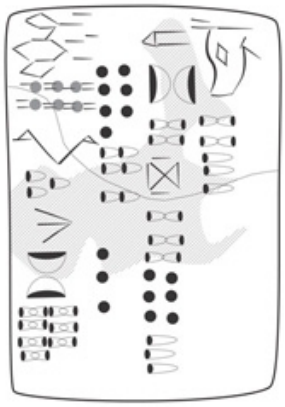
xx) MDP 17, 210

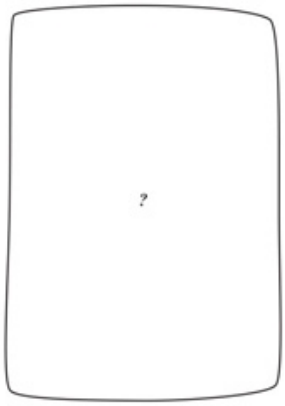


xxi) MDP 26, 51

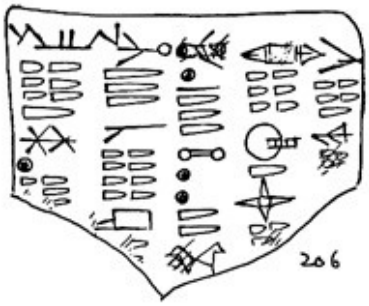


xxii) MDP 26, 214

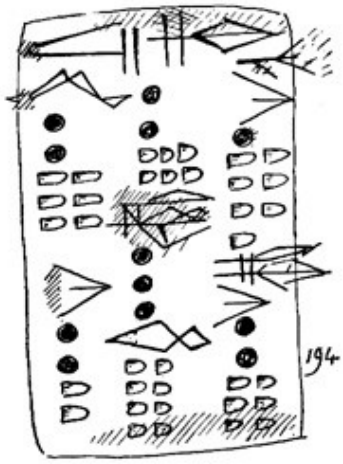




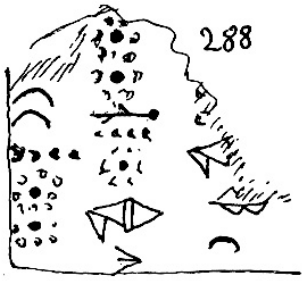
xxiii) MDP 26, 205

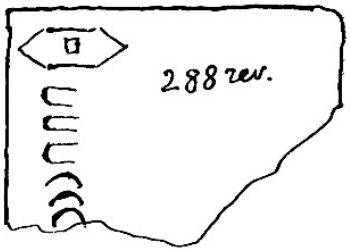


xxiv) MDP 26, 206

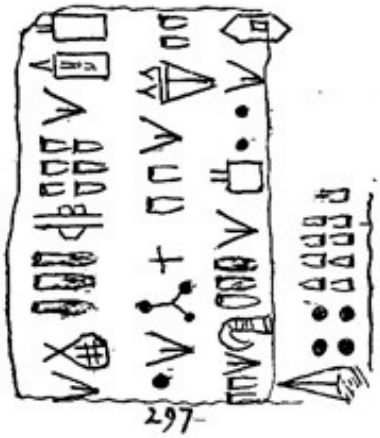


xxv) MDP 26, 194



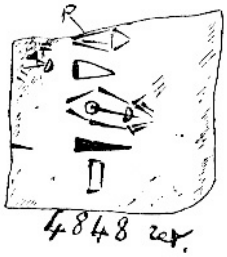


xxvi) MDP 26, 288

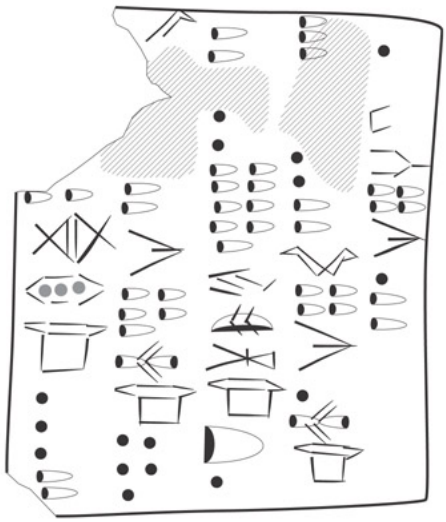


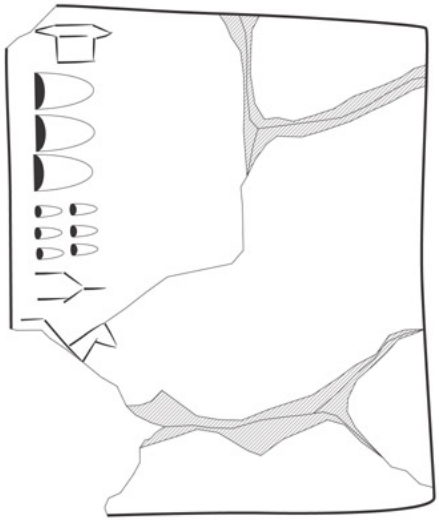
xxvii) MDP 26, 297

xxviii) MDP 26, 472



xxix) MDP 26S, 4848

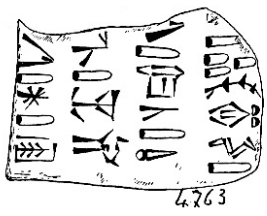


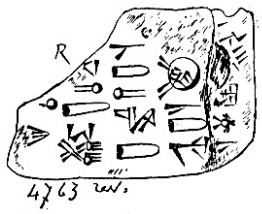


xxx) MDP 6, 390

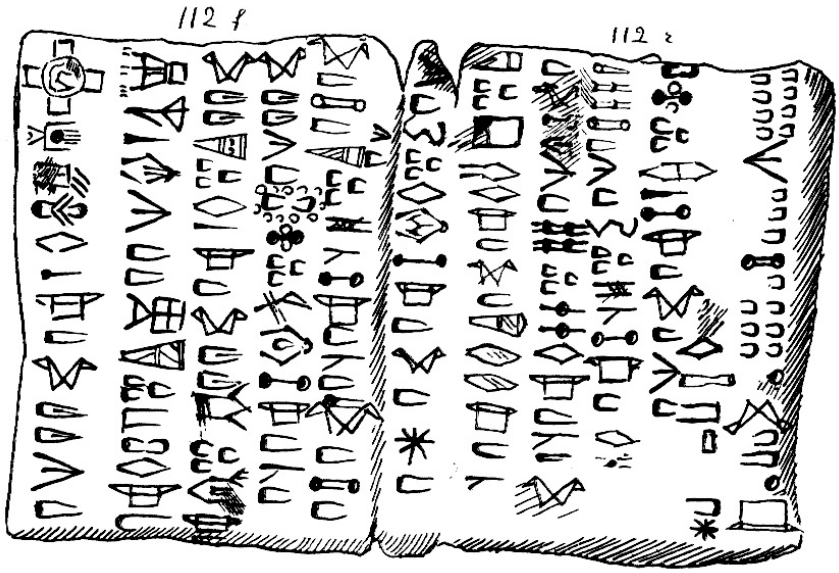
xxxi) MDP 6, 290

xxxii) MDP 17, 44





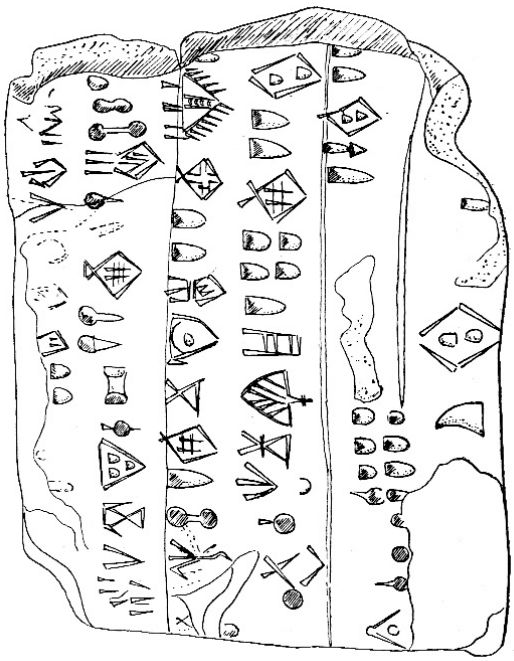
xxxiii) MDP 26S, 4763



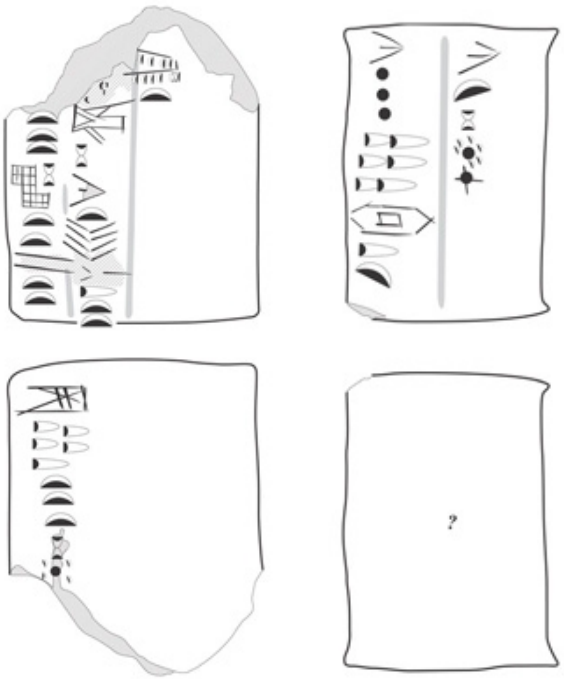
xxxiv) MDP 17, 112

xxxv) MDP 26, 303

xxxvi) MDP 6, 243

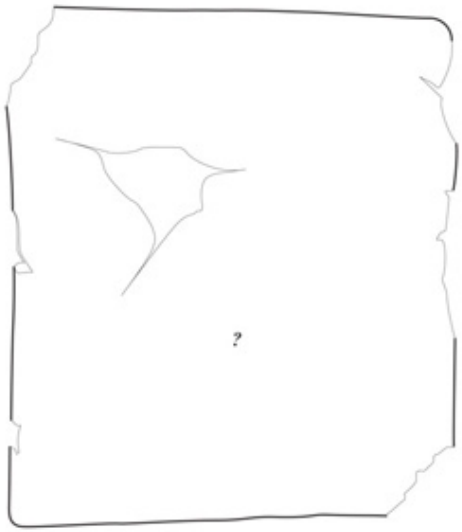


xxxvii) MDP 31, 16

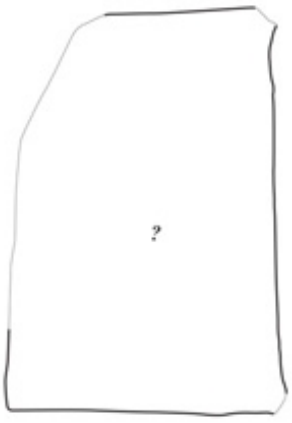


xxxviii) Yahya 18

xxxix) Yahya 12

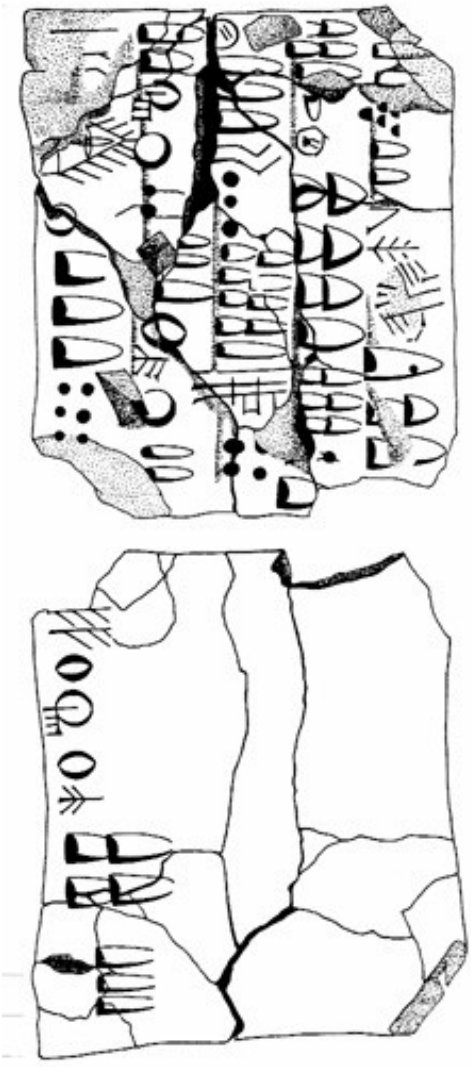


xli) Yahya 11



xl)Yahya 14

Account from Tal-i Malyan including M72



xlii) KADMOS 24, 6

Fragments from Tepe Sofalin including M72

xliii) TSF 7 / P393085

xliv) TSF 10 / P393088