Libri Novi

BARTASH, V. 2019: *Establishing Value: Weight Measures in Early Mesopotamia* (= *Studies in Ancient Near Eastern Records* 23), Berlin: De Gruyter. i-xviii, 270 pp.; ISBN 978-1-5015-1026-7.

Vitali Bartash has done an excellent job in bringing together and clarifying the cuneiform evidence for balance weights and the process of weighing in Mesopotamia in the late fourth through the third millennium BCE. The volume is a must-read for anyone studying ancient mensuration and anyone interested in measurement systems in general. The book clearly delimits the terms used for weighing in cuneiform and the way in which the terms changed through the centuries, then outlines the potential development of Mesopotamian weight mensuration based on the changes of expression and calculation in the texts. The evidence points to three periods of weight measurement reform, each of which may have been connected with political developments in the region as state control solidified or shifted at the beginning of the Early Dynastic, the Akkadian, and the Ur III periods respectively.

Most laudable is Bartash's clear emphasis on weighing as an economic practice imbedded in society (a cultural phenomenon); in other words, weighing is a human endeavor that impacted (and was shaped by) many aspects of ancient life. In this simple statement is the core of anthropological efforts to understand the past. As Bartash, influenced by his work in the Frankfurt Value and Equivalence group, recognizes, it rightly should be the main approach to the analysis of weights and weighing[1].

Weighing was most definitely an important aspect of ancient life, deeply interwoven in the fabric of society. Bartash (p. 9) expresses it well "...as an interplay of structural elements of metrology, writing, material culture, economic interest, and social action." Many studies of weights attempt to understand the physical objects and the mathematical system behind them, but just as important should be the attempt to understand the circumstances in which they were used and the people who used them. These aspects are foci of separate chapters of Bartash's book, seeking the most common goods associated with the process of weighing as well as the terms for the people who did the weighing and the places in which they were said to perform the task. In some cases the sources do not carry much detail, but that does not preclude the effort to gather that evidence nor diminish its importance.

Bartash begins with a very effective intro that not only establishes the main emphasis of the work, but also the definitions of important terms and concepts that appear throughout the volume. This is vital, as so many words and phrases associated with weights and weighing—especially when discussed in the context of payment or monetary usage—have taken on various assumed meanings in modern culture. Money itself is extremely difficult to define because it can hinge on so many elements. Modern

[1] The approach is not unique, but should be more prevalent. Bartash (p. 152) claims that no one asks the question of who did the weighing and where, yet some have; my own dissertation (HAFFORD 2001) sought to identify such people through the objects they left behind in the archaeological record. Admittedly, it was primarily second millennium and weakest on the textual evidence. More importantly and more recently, several workshops have been conducted under ERC grant 648055, "Weight and Value," focusing not only on weights but also on markets and the formation and transformation of value in many ancient cultures including Mesopotamia (RAHMSTORF & STRATFORD 2019).

fiat money is so deeply entrenched in the activities of modern people that we do not typically analyze it, but simply use it every day. Thus, there may be clearer or more specific terms to use when discussing ancient money, but all the evidence shows that weighing was often used to measure out payment (means of exchange) in the form of grain, copper, or silver (measure of value) that could be kept for later exchange (store of value) in ancient Mesopotamia. Bartash does not shy away from this idea. In fact, he shows that money in Mesopotamia may have existed in the late Uruk period (p. 3) and that copper was used in this manner in the EDI/II period (p. 4). Silver became the money par excellence in the EDIII.

In this he agrees with Marvin Powell, a scholar whom Bartash often and rightly acknowledges. Powell brought together the cuneiform and physical evidence of weights and weighing throughout his career, beginning with his dissertation in 1971. Though he never published the dissertation as a monograph, he continued to publish important articles for the next 30 years and more, and these have provided much insight and inspiration to scholars of Mesopotamian mensuration. Powell's *Reallexikon* article (1989-1990) condensed much of his evidence into a very useful format, but even it is in need of updating in light of new evidence. For example, as Bartash (p. 11) points out, too few third millennium texts had been published at the time for Powell to identify pre-2600 BCE mentions of weighing. Bartash has done a good job of updating our understanding of weighing in the cuneiform records.

On the other hand, Powell often utilized archaeological evidence[2], while Bartash uses almost none. Bartash's introduction freely admits his exclusive reliance on the cuneiform record as "the bricks" of this book (p. 5). As an archaeologist myself, I would have preferred more inclusion of the physical evidence. Yet, I must agree that this evidence is difficult to use, as many ancient Mesopotamian weights were excavated long ago and now languish in museums largely unpublished and without good provenance that would allow them to be accurately dated. Weight shapes were quite conservative, being used for centuries without change; thus, ancient weights in museums are difficult to assess except with regard to their probable weight standard. Even that analysis is subject to error since Mesopotamians did not mark most of their weights as to the intended multiple or fraction of a unit. Those that are marked typically carry the most minimal of inscriptions, and paleography is not much use in the case of a simple vertical stroke for each shekel. Even the GIN_2 or ma-na signs that appear on weights seem to be written in a similar fashion over many centuries.

The four chapters that follow the introduction discuss specific weighing terms, particularly the units of the system or the fractions thereof, as they appear in tablets dating to the relevant periods. These begin where possible with the earliest written texts of the Uruk IV and III, but these are still not completely understood. Of course, recent work has made great strides to this effect, especially in the numerical systems represented[3]. These systems were apparently in use for mensuration, particularly of length and capacity, and some scholars have suggested that a third system, known as EN or System E, could represent weight mensuration[4]. Bartash (p. 12) believes this is not the case; that, instead it has to do with grain in some way. Thus, each of the chapters 2-5 cover a different important term, from largest to smallest in the weighing system as it appears from EDI-Ur III. The terms Bartash covers are relatively familiar to anyone studying weights, but the collation of their occurrences and the analysis of the progression through time for each measurement unit is extremely useful.

As we discover in Chapter 4, the sign $gi\hat{g}_4$ is the true writing of the word that comes to mean shekel, but it was often mistaken for GIN_2. That fact is not the first that is addressed in the chapter, however. The other issues that are addressed immediately are important, and the reading of the development of the sign and its similar signs is presented in a chart on the second page of the chapter (p. 61), but confirmation that $gi\hat{g}_4$ is essentially the same as GIN_2 would have been helpful up front, since the term

[2] Such as in his discussion of actual silver coils in the Oriental Institute of the University of Chicago and their potential use as weighed currency (POWELL 1978).

[3] Various works such as CHAMBON (2011a; 2011b); ROBSON (2007, 2008), ENGLUND (2011), WOODS (2010).

[4] See, for example, WOODS 2010, 41.

$gi\hat{g}_4$ appears often before this chapter (e.g. in Chapter 3 about the mina, p. 38, 44-47, 53). I learned the Sumerian sign for shekel as GIN_2 = 'axe.' Naturally I was curious as to why the Sumerian word for 'axe' would be related to the Akkadian word for 'shekel' or more literally 'the thing weighed out' and that curiosity is addressed, but it is only after that we hear that $gi\hat{g}_4$ is often confused with GIN_2 or even with DUN_3. Perhaps the sequence does not matter, especially for someone who is either very well associated with current readings of cuneiform or for someone who has no knowledge of it. Only for those who have some knowledge and learned GIN_2 instead of $gi\hat{g}_4$ is it an issue. However, archaeologists studying weights may be in that crowd and may be a big portion of the readers of the book.

In fact, Bartash is so accustomed to cuneiform that he tends to use words, phrases, or examples that are natural to him but perhaps not to non-specialists. In this he falls into the same pattern that he reveals in Sumerian scribes—those things that are normal to them were not explained or even written down. To be fair, Bartash attempts to explain most things[5], but he could be clearer for the uninitiated. This is not a book meant to explain counting systems or early mathematics, but the mention of sexagesimal vs. bisexagesimal systems (e.g. p. 23) with no explanation, and the frequent mention of N1, N8, and other numerical signs without showing what is meant, is confusing. Particularly problematic is the use of the terms 'round' and 'pointed' numbers (e.g. p. 39). The term 'round number' has a mathematical meaning—a whole number (without fraction)—but this is not what Bartash means. By 'round number' he apparently means a numerical sign made on a clay tablet by the back, rounded end, of the stylus. By 'pointed number' he appears to mean one made with the front, pointed end of the stylus. This is not explained, though it can be intuited. Such details would be obvious to a cuneiformist, but in rewriting his dissertation for this volume Bartash has expressed the goal in the preface of "...making it accessible and enjoyable to specialists and the general public alike." The general public will struggle with some of these issues.

A chart of the most common cuneiform signs in use with weighing would have been very helpful, but is not included. In order to find some of the signs, in particular the sequence of N signs, I utilized the excellent chart in ENGLUND 2011[6]. Bartash does include some informative charts in the early chapters that discuss specific weighing terms, such as the development of the DUN_3 and GIN_2 signs (p. 61) and the usage of $NINDA_2$ (p. 74, 76), but some N signs are shown mixed in with these and not explained, and the most basic term ma-na is never shown in its cuneiform—it is always written out in Latinate letters. This is such a common term to Bartash and most readers of this book that perhaps its cuneiform is unnecessary, but I would err on the side of completeness and include it in a reference chart of common cuneiform concerning weighing, perhaps as an appendix. Recognizing the actual characters is almost as important as discussing their meanings.

Chapter 6 is a vital portion of the book, as it analyzes the data of the preceding chapters to place them into an overarching development of the Sumerian system of weight mensuration. The cuneiform evidence indicates a move from conceptual, comparative measures such as the 'load' to defined standard measures such as the 'talent'[7] somewhere around the beginning of Early Dynastic I. Bartash admits that the evidence for this earliest stage is not as substantial as might be hoped, but the indication of standardizing units is clear, particularly with reference to GUN_2 (load/talent). In the chapter covering this unit (Chapter 2), Bartash claims that it was not standardized with reference to the weight of water in a jar, even though the early sign GU_2 clearly indicates a rounded bottom, high-necked jar (p. 18). Although the load may have been related to bundles of reeds or

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5 He even explains what a scale is (p. 138), although this is likely more intuitive than cuneiform for most people.

6 ENGLUND (2011, 39, fig 2.4), an extended figure that not only shows the N signs in their various systems but also shows a direct comparison of sexagesimal and bisexagesimal systems. Part of this figure is also found in WOODS (2010, 41, fig. 2.9). This general book is very good at explaining the systems and numeration of early Mesopotamian texts.

7 As Bartash (p. 16) notes, this is a later, Greek term, but scholars also generally use it to indicate the unit of the Mesopotamian standard load, GUN_2 in Sumerian, *biltu* in Akkadian.

other materials, the jar indicated by the cuneiform sign must be more carefully considered. Bartash claims it was meant to represent a small jar because the indicated form lacks handles. Apparently, he believes that a large jar requires handles, but this simply is not true. There are many large jars in Mesopotamia without handles and, in fact, handles are not an efficient way of moving large jars[8]. They were typically wrapped with rope in order to be hauled about. Large jars were often made with ridges to aid in manufacture and to aid in securing ropes. Even the small handles seen on Greek pithoi are made for stringing ropes through, not for use in direct lifting. This does not mean that the Sumerian load became standardized with reference to the weight of water in a particular jar, but it means that we cannot dismiss the possibility as readily as Bartash has.

Regardless of the origin of the sign for 'load' or what the basis for its standard became, the distinction between 'primitive' measures and 'standard' measures is an important one[9]. Truly standardized units might only be created, recorded, or detected after or alongside the development of writing, but earlier measures did exist. Accounting was certainly conducted, as indicated by the presence of tokens, thousands of years before writing[10]. Some tokens represented jars of grain, but were these jars of standard sizes? That depends on what is meant by 'standard.' Bartash has done a good job of discussing most of his terms, but he never directly engages with how he interprets a standard. Essentially, a standard is a unit that is clearly defined and regulated by some authority or group to ensure that people over a large region are utilizing the same definition[11]. This facilitates building, land assessment, crafting, trade, taxation, or other interactions—all, like writing, related to rising social complexity[12].

Measurement for accounting and crafting purposes was conducted long before writing. The units in use, however, were relatively loose in meaning (HAFFORD 2019, 17, 28). Early measures were almost always in reference to an individual view of the world. For example, all humans understand whether something is taller or shorter than themselves. This is the origin of height/length measurement. We also recognize that the length of our arms is related to our overall size. Thus, an arm's length becomes a relative measure, including subdivisions of that measure (forearm, hand, and finger)[13]. More importantly, on average, an arm's length is a good approximation of a 'standard,' since there is a relatively stable range of variation in size in an adult human population. No two arms are likely to be exactly the same, but they are close enough for most usages. Only when the need to be more precise arises, perhaps for more technical mixing of crafting materials or for more specific understanding of two products in exchange, are true 'standards' developed[14].

Bartash himself (p. 13) states that "Capacity metrology must be as old as the so-called "Neolithic Revolution"." But he, like most scholars of mensuration, believes that weighing was only developed later, with the trade of metals and luxury materials. This is likely true, though metals were being traded prior to

8 They must be attached to the clay body, resulting in a weak point that will often give way under stress.

9 I do not like to use the word 'primitive,' as Bartash (p. 2, 20) has, because of its modern, pejorative sense, but in its meaning 'first' or 'early,' it is accurate. Perhaps 'conceptual' vs. 'empirical' standard might be better?

10 See, for example, SCHMANDT-BESSERAT 1992; 2010.

11 This all fits in with Bartash's (p. 2) brief mention of a progression from prototype (initial conception of something like an arm's length) to primitive unit (a recognition of the far-reaching similarity of the arm's length as a near-standard), to standardized unit (a defined and controlled unit, likely state sanctioned).

12 The unit will still have variance, no matter how well defined it is. The variance will depend on many factors, not least of which is the technology available to assess the expression of that standard (e.g. how well made a scale to assess weights affects the range of variance of those weights).

13 Where 'hand' and 'finger' are concerned, it is most often the width, not the length, which establishes a proto-standard; finger lengths vary even on the same hand, but the width of each finger is roughly equivalent.

14 And no standard can be exact. We strive even today to define the exact length of a meter or weight of a kilogram. All standards arise from comparison to other objects, and nowadays we utilize wavelengths of stable isotopes or of light as the definition of some measurements, such as the meter.

the development of writing. Weight is the most difficult of measures to conceptualize, as it is not easily linked to parts of the human body. We are not typically aware of our total mass in comparison to other things and we cannot readily subdivide it. We are, however, aware of 'heaviness' whenever we pick something up, and this concept likely did play a role in early exchange. The comparison of one person's armload to another's is not as easy as one person's arm length to another's, and thus 'armload' or 'bundle' would likely be a very loose measure, particularly because it varies in both volume and mass. This might lead to different 'loads' for different materials. I have always found it difficult to believe that the load would form the basis of the Mesopotamian weight system (as argued by POWELL 1971, 209) and am much more convinced by Bartash's (p. 16) reconstruction of the mina and the shekel as the initial weight units forming standardized measures.

Chapters 7 and 8 deal with mentions of physical weights and scales in the cuneiform records. These chapters, however, tend to be less well proofread than the initial six. Minor grammatical errors increase from here through the end of the volume, but this is not overly distracting as they are almost all quite minor. Naturally, I would have preferred to see more inclusion of physical studies of weights and scales in these chapters rather than solely the written evidence[15]. Bartash does mention some studies of physical weights, but he is not as familiar with them as one might hope. I would not expect him to be an expert on this part of the topic any more than I can be an expert on the cuneiform evidence, but there is more to say than that most studies of weights concentrate on Syria and on the interaction with the Aegean (p. 113)[16]. It is true that Syria is the principal focus for analyzed third millennium examples, since the weight evidence from Palace G at Ebla can be directly dated to that era[17]. In southern Mesopotamian sites, weights that carry a clear third millennium inscription bearing a ruler's name have been easily recognized, though there are few with such long inscriptions. There are a few duck weights of this sort and this must be the source of Bartash's (p. 165) statement that only the Ur III duck weights have been identified as third millennium evidence in the south[18]; yet, other inscribed Ur III weights are known[19] and some attempts at understanding the context of various weights at southern Mesopotamian sites have been conducted[20].

Bartash's assessment of the meagre state of third millennium weight studies is partly correct, but he makes a few other blanket statements based on the cuneiform evidence that are clearly disproven by the physical evidence.

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15 There is much less physical evidence of ancient scales than of weights. The evidence that there were shekel, mina, and talent scales (p. 139) is nice to confirm in the written record, but not surprising. Each of these scales provided different orders of accuracy. Even today there are more sensitive scales for measuring smaller things, and broader scales for heavier, larger things. The idea that a 'balance for silver' vs. 'a balance for copper' indicates different standards for measuring the two metals (p. 151) seems unlikely to me; rather, silver was weighed in smaller amounts than copper and required greater sensitivity in the scale.

16 A blanket statement that he seems to have interpreted from RAHMSTORF (2006; 2014). Rahmstorf has conducted a great deal of research into ancient weights throughout the larger eastern Mediterranean region. He has done sound and important work, showing potential weight evidence back as far as 2800 BCE. It is natural for Bartash to seek out synthetic works rather than individual site publications, but Rahmstorf clearly shows that there is more evidence for these periods than in Syria alone.

17 Much work has been done on these weights in their context, for example, ASCALONE & PEYRONEL (2006).

18 Presumably meaning ducks with clear Ur III inscriptions, such as that bearing the name of Shulgi, Iraq Museum 3580 (U.7825), but there are not many that carry such extensive inscriptions.

19 Such as British Museum 116419 (U.901), a one talent, stele-shaped weight inscribed with its weight and the name of Amar-Suen, which was reused as a door socket in the temenos wall at Ur (HAFFORD 2012, 21).

20 For example, PEYRONEL 2000 examined a specific context of weights at Ur. ARNAUD *et al.* (1979) published the 'Larsa goldsmith's hoard' and this was later closely analyzed by others, such as BJORKMAN (1993) and even more recently by CHARPIN (2017). Weights at Nippur have been examined, including their context, in HAFFORD (2005a) and those from Ur in HAFFORD (2012). Much of this evidence is second millennium, however, so Bartash is not completely wrong.

For example, he states (p. 120) that weights of certain values do not exist in the written record and therefore do not exist in the physical record. Among these are weights of 6, 7, 8, and 9 shekels. Yet, a clearly marked and measured 7 shekel weight exists from Ur[21]. This weight, Penn Museum B17101 (U.7508), is of the ovoid (sphendonoid) type and bears seven incised lines indicating its units. Furthermore, it weighs 58.7 grams, which is 7 shekels of 8.386 grams each, very nearly what would be expected for Bartash's 8.33 gram shekel[22]. Although the multiple seven is not attested in the written record and is mathematically unwieldy, the fact remains that it did exist in at least one proven example[23].

Bartash (p. 102) also states that the little shekel (gi$\hat{g}_4$-tur) may be solely a unit of calculation as there are no known physical weights of this value. Yet, there is at least one known. It is part of a group of weights with the accession number Penn Museum 92-4-249, and is a tiny ovoid weighing in at 0.14 grams, which is three barleycorns or one little shekel[24]. This shows that Sumerians could manufacture and assess weights of such a miniscule amount. Perhaps, as Bartash suggests on the same page, actual barleycorns were also used for weighing in some instances[25].

For physical studies of weights, Bartash relies heavily on RAHMSTORF (2006; 2014) and praises him for showing the large number of weights that come from domestic contexts. Weights are, indeed, found in many houses in many periods (e.g. at Nippur, HAFFORD 2005a, 366). They are also found in graves, some of which are beneath the floors of houses and thus potentially also domestic (HAFFORD 2012, 46). Referring to Rahmstorf, Bartash identifies the inscribed one mina weight found at Tell es-Sweyhat as having been connected with manufacture, probably metal working[26]. This is because its context also contained a crucible of sorts, a few metal pieces, and a pair of tongs. If we look more deeply into the records, however, HOLLAND (1975, 76) describes the context as "stores and workshops," because storage jars were also found in the suite of burned rooms. The context dates to the late third millennium and likely contains other weights, as three hematite pieces were discovered in neighboring rooms—one spherical and the others oblong (HOLLAND 2006, 230). They were not recognized as weights, but called "tools… used for some manufacturing process." Unfortunately, they were never weighed and cannot now be further investigated due to the current state of affairs in Syria. Nevertheless, third millennium weights (even uninscribed weights) can be identified in some published records, and their contexts often

21 This weight is discussed in HAFFORD (2012, 17, 21). Admittedly, it is early second millennium in date and Bartash is primarily discussing the third millennium. Yet, some of the weight lists Bartash refers to come from the second millennium (e.g. p. 120). There is also a weight with 6 marks from Ebla mentioned in RAHMSTORF (2006, 21).

22 The 8.33 gram shekel is mathematically deduced from a somewhat mythical 500 gram mina. In practice, the mina, like all units, varied, typically ranging from 470-520 grams, and the shekel from roughly 8.0-8.8 grams.

23 My best guess is that it is marked with 7 precisely because it is an unusual multiple that needed to be identified even to users familiar with the system. The reason it existed may have to do with a cross-over to another system. For example, 7 Mesopotamian shekels roughly equates with 1 Aegean Bronze Age weight unit of around 61-65 grams.

24 This weight, and several other small weights found with it, is discussed in HAFFORD (2005b, 37). It comes from Ur and though its field number is unknown, it is likely to be U.14003 from PG/1609 in the Royal Cemetery, making it third millennium in date. NISSEN (1966) notes finds in the grave that date from EDIII-early Akkadian. If Bartash is correct in saying that the little shekel is an Akkadian invention, then perhaps this is a grave of early Akkadian date.

25 This theory has been proposed in general discussion before, though it has not generally been accepted. At the individual level it would have been difficult to assess, but in larger numbers, barleycorn masses would average out and provide a relatively good approximation of a standard measure. It may also be the basis of different standards in different regions, i.e., different grain types grown in different regions (such as barley vs. emmer wheat) counted at 180 grains to the shekel would result in different masses for the respective shekels).

26 This weight was initially dated to the Ur III period (HOLLAND 1975, 75) based on palaeographic evidence (though on stone weights this is not a reliable source of date). It was later reassessed to the Akkadian period (HOLLAND 2006, 231) based on a true archaeological understanding of the context.

indicate domestic usage (crafting and/or storage accounting). This goes to support Bartash's (p. 13) statement that: "The present historical study and the current archaeological research on the topic are the necessary prerequisites for a future comprehensive synthetic study of the weighing in early Mesopotamia." Indeed, archaeologists and epigraphers must work together to understand the weighing system still more completely.

Bartash has made great strides to this effect and we can only add to his work by coming to a better understanding of the archaeological record. But archaeologists must not rely solely on the cuneiform to guide them. At times, Bartash admits that scribes were flawed; for example, he wisely states that we see through the myopic eyes of the scribe: "We cannot see the system of weight measures. We see merely how it was used by a small part of the population at the top of the social pyramid" (p. 96). At other times, however, he seems to rely on them wholeheartedly, such as the argument that weights change when writing says they change; that only weights mentioned in the texts can exist; that textiles may not have been a big trade item because texts do not say they were; that the mention of heavy weights shows that smiths and textile workers were illiterate[27]. Moreover, Bartash (p. 91) states: "The data clearly indicate that the innovations in the weight metrology and their representation in script were never isolated events." This is tautological because the data he uses are entirely textual; so, of course the data (scripts) will show that the weights (in the scripts) are not isolated from the scripts[28].

I cannot fault Bartash for arguing from the texts, they are his specialty and he has provided excellent information throughout his book using that evidence. Nonetheless, I must point out some of the circular reasoning and seeming inconsistencies he has created from that evidence. For example, Bartash (p. 154, 157) shows that 'weighmasters' (those conducting the actual weighing) are often also identified as merchants, smiths, or other professions in the texts, and yet he seems still to want to define a profession of 'weighmaster' (p. 152) that was of a specific socioeconomic and legal status and that required literacy. Why it must be a profession in itself and why the person must be literate is not clear; they would need to be numerate, but numeracy precedes literacy by millennia and perhaps was more widespread by this time than literacy. Furthermore, weighing was commonplace, as shown by the large numbers of weights found in houses in most archaeological sites, and the act was surely not deemed important enough to point out in most texts. Many people understood the act of weighing and it may even have been conducted by people on both sides of an exchange to ensure agreement. This may not have happened on an official delivery to a palace or temple, but in private transactions it seems likely[29].

The analysis in Chapter 10 is the culmination of much research in the topic of the 'core goods' in trade that required measurement by weight. Bartash (p. 169) comments on how little this has seemed to interest scholars of metrology, but it has always been a fundamental question of interest to which the physical remains rarely hold answers. So, scholars who study the physical weights are interested, but have not had the evidence; therefore, I applaud Bartash for compiling this lengthy chapter on those very materials from the texts. The idea of core goods—metals[30], wool, and resins—that trig-

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27 It is possible that most workers/craftsmen were illiterate. Nevertheless, a talent weight used in the textile industry being listed in the texts as actually weighing one talent plus two and two thirds minas in no way indicates the people using the weight could not read, as Bartash suggests it does (p. 164).

28 Bartash admits that archaeological data is needed to support the ideas he has presented. In particular, he calls for more archaeological investigation at the end of the book (p. 237), but even here he prioritizes the finding of more EDI/II texts rather than finding more weights in well-defined contexts.

29 Bartash himself (p. 159) shows an example where the 'weighmaster' appears in one transaction to be the buyer rather than the merchant, which would support the idea that either or both might perform the weighing.

30 I would have liked to hear more about the shapes that metal ingots might have taken (as described in the texts). Ingots are the form in which much metal was likely traded, but Bartash rarely mentions them. He does say (p. 232) that an ingot may have been the initial basis of the mina weight, but he does not discuss what shape it may have taken (though he mentions early copper axes as potential ingots). Perhaps ingots are only discussed in

gered standardization of weight measures is convincing and almost certainly correct. In my opinion, however, weighing began earlier than 3000 BCE, the earliest point that Bartash (p. 229) believes, but would have used loose and local 'standards' not strictly regulated or written down, and is thus very difficult to prove.

The final chapter, Retrospect, interprets the data in a way that may be pushing the evidence too far. It is a good summary of what has been stated in the book, but the overarching question of whether or not the state controlled weighing, and the interpretation of what state means, clouds the issue. Bartash identifies the first 'real standardization' with the first 'real state,' which he claims was the Sargonic (p. 230). It may be true that 'high culture' (writing and administrative practices) is not equivalent to 'state' (hierarchical, regulatory government), but this is a much deeper question than a passing comment and a few minor references can subsume. Contrary to Bartash, state level government likely does begin in the Uruk period and weighing may also begin here, though both depend on how one defines them[31].

The Akkadian may have been the first expansive, territorial state (some would say empire), but it is not likely the first state itself[32]. Regardless, Sargonic reforms during this expansive period certainly affected weighing practice and Bartash has shown that well. The earlier weighing 'reform' of the Early Dynastic period may also have been driven by an early state, though Bartash is much more hesitant here, saying that it may not have had anything to do with political developments (p. 232). It is possible that increasing trade over longer distances drove the need for standardization at this time. Rising trade certainly had an effect on weighing, but not solely at this time. The need for measurement to assess value had long been present, and both counting and measuring have a very ancient history long predating writing. Increasing market (loosely defined as expanding trade) drove the need for measurement, and growing state (loosely defined as regulatory government) refined the definition and standardization of measurement.

With this book, Bartash has done a great service to the study of Mesopotamian weight mensuration. He is particularly succinct and correct in saying that: "Weighing is articulating value" (p. 236), and it sums up the message of the book quite well. The specifics of how weighing operated and just what value means, however, will be debated for many years to come.

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second millennium and later texts. POWELL (1996, 237), for example, discusses 'tongue' and 'cake' ingots.

31 Bartash (p. 230) says that no evidence points to weighing in this period, but some does, in particular at Tepe Gawra levels IX and VIII. Several artifacts from these levels are suggested as weights by TOBLER (1950), and are reanalyzed in HAFFORD (2019). Admittedly this is not absolutely secure evidence, but combined with the numerical system EN in the Uruk texts being possibly connected to weighing, there is at least some possibility of weighing in the fourth millennium.

32 I am also guilty of making a passing statement about a complicated issue and adding a few references: ALGAZE (2005a; 2005b), ROTHMAN (Ed. 2001), OATES (1993).

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