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Review: [untitled]

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Source: *Journal of Field Archaeology*, Vol. 20, No. 4 (Winter, 1993), pp. 513-517

Published by: [Boston University](#)

Stable URL: <http://www.jstor.org/stable/530080>

Accessed: 09/08/2011 05:21

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Book Reviews

CURTIS RUNNELS

Before Writing. Volume I: From Counting to Cuneiform

DENISE SCHMANDT-BESSERAT. 304 pages, 175 photos, 43 line drawings, 6 tables, 16 charts, index. Austin, TX: University of Texas Press, 1992. \$60.00 clothbound. ISBN 0-292-70783-5.

Before Writing. Volume II: A Catalogue of Near Eastern Tokens

DENISE SCHMANDT-BESSERAT. 544 pages, 16 photo charts illustrating 527 tokens. Austin, TX: University of Texas Press, 1992. \$85.00 clothbound. ISBN 0-292-70784-3.

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The promise of a “new theory” for the origins of writing, proffered by the introduction to the first of these elegantly produced volumes, is simultaneously an understatement and an overstatement of their import. To suggest that there is only one new theory here is singularly modest—the work is teeming with theories, suggestions, ideas, and speculations. The newness, however, is a matter of relative judgment. For almost two decades Denise Schmandt-Besserat has been studying and writing in solitary intensity on small clay objects found in the Near East, and generating theories about their use in recording systems. Most of the ideas in these two books have appeared in print before, scattered among an extraordinary range of her publications (Schmandt-Besserat 1974, 1977a, 1977b, 1977c, 1978, 1979a, 1979b, 1979c, 1980, 1981a, 1981b, 1982a, 1982b, 1983, 1984, 1986, 1988, in press). Her hypotheses about the relationship between the loosely defined category of artifacts she calls “tokens” and the origins of writing and numbers have been expounded in *Time*, *Science News*, *Discover*, and in the “Science and the Citizen” column of *Scientific American*. Some-

what anachronistically, her ideas were presented in a public television program on the royal archives of Ebla. They have permeated secondary literature, particularly general textbooks on archaeology. In all likelihood, Schmandt-Besserat’s views on the development of cuneiform are more widely known than any previous or competing theory.

The contribution of the works under review, therefore, is not so much a new offering, but a summation of earlier ideas and an exposition of data upon which they are based. For the first time the author has put most of her cards on the table, given a list of the tokens by type and provenience, and made it possible to review the substance and validity of her work. The result is devastating.

The way this material is presented does not make it easy to relate fact to hypothesis. Volume I, containing the entire written argument, a typology of the tokens, and abundant illustrations of high quality, is probably all that most readers will care to deal with. Volume II, less lavish but priced in expectation of more restricted sales, is not designed to be read; except for sixteen photographic plates of selected tokens at the beginning, it is simply a printout of a clumsily organized database. To extract reliable generalizations from this “catalogue” requires hard work, yet without them there is no basis for the familiar structures of Volume I.

Schmandt-Besserat began her career by studying the early use of clay in the Near East, an unwieldy subject which she divided up for publication by subregion (1974, 1977b, 1977c)—an organizational principle that she retains in her catalog by classifying and totalling separately finds from Syria, Iraq, Iran, etc. Among the objects that attracted her attention in these broad reviews were small cones, spheres, tetrahedrons, and other simple geometric forms. Although they first appear in the archaeological record at the dawn of the Neolithic era, she suggested that the key to understanding them was to be found at late 4th-millennium Susa, where similar pieces were sealed

into clay envelopes roughly the size and shape of baseballs, known in the literature as bullae. Her theory for the creation of writing germinated in suggestions of Pierre Amiet (1966) and Maurice Lambert (1966) that the geometric objects were counters and that each bulla was the record of a transaction: "Later in the fourth millennium when writing was invented, the cones and spheres were translated into two-dimensional pictographs and were drawn with a stylus on clay tablets" (Schmandt-Besserat 1974: 12).

From this point she set off on an archaeological odyssey into new conceptual territory. She became adamant about a point which she first admitted might be "presumptuous"—that the tokens of all periods were part of a single system:

The geometric objects can be traced without discontinuity in assemblages from the IVth to the IXth millennium B.C. All along the millennia, their well-defined geometric shapes remain identical, attesting that they were assuming a consistent and definite function. (1977c: 33)

Secondly, she vastly expanded the number and variety of objects that she regarded as precursors of cuneiform signs. More intricate and complex shapes, artifacts which were marked and perforated, and objects made of materials other than clay were assigned the status of "tokens." She suggested that a new class, called "complex tokens," was introduced in the 4th millennium and was to be distinguished from the "plain" tokens which had been part of the archaeological record since the early Neolithic.

It was her contention that not just numbers, but the word-signs that form the core of the cuneiform system were derived from tokens in a relatively straightforward developmental sequence. The token system first appeared with the origins of agriculture, but remained relatively uncomplicated until the onset of urbanism. Then, new commodities and new bureaucratic needs prompted the creation of the vastly more varied "complex tokens." Accountants in early cities like Uruk and Susa tried various means of keeping tokens in meaningful groups, such as stringing them together, or placing them in clay envelopes. Since the latter were opaque, notations of their content—pictures of the tokens within—were inscribed on the envelopes. Once that was done, it was only a matter of time before it was recognized that the tokens themselves were unnecessary; the inscriptions on the outside sufficed to convey all the information. The hollow clay ball was soon flattened into a tablet, and cuneiform signs, originally pictures of tokens rather than direct depictions of referents like sheep, jars of oil, etc., came into being. By observing the shapes of the tokens and comparing them with shapes of cuneiform signs on archaic tablets, she sought to assign

meanings to a fair number of tokens.

In the 1980s, as a consequence of her perception that the accounting system operated on a principle of one token per object, or in some cases one token standing for a group of identical objects, such as "ten sheep," Schmandt-Besserat dropped one of her first assumptions about the tokens, that they represent numbers in the abstract. She no longer viewed a cone, for example, as standing for the number *one*, but rather *one unit* (or measure) of grain. To signify one of something else, a token with a different shape was used, and to indicate two of something, one had to use two tokens rather than an abstract token for "two" and another token to indicate what kinds of things were being counted. She saw this principle, in which number is embedded with specific commodity in a given symbol, remaining constant for six millennia and in all parts of the Near East, particularly in the few bullae discovered intact. Archaic tablets, however, use a different system of accounting, where a graph that stands for a commodity is inscribed in the same rectangular case as an abstract number when plurality of that commodity is to be represented. Rather than let this cast a shadow on the tenet that bullae evolved into tablets, she has elaborated, in her most recent work, a theory that the way Mesopotamians thought about numbers changed significantly in the late 4th millennium. The pictorial tablets are the material reflection of an intellectual breakthrough that actually enhanced the development of writing—the recognition of numbers as abstractions, rather than concepts imbedded in specific objects. Once this mental leap was made, it freed the tokens to represent a more diverse range of conceptions, including things that were not inherently countable.

This journey in quest of the origins of writing, from clay objects so small and simple they have often been ignored by excavators to a history of numerical reasoning, was purely archaeological. It had nothing to do with philology, linguistics, or even language. There are many assumptions meriting serious scrutiny in this framework, but the foundation upon which all rests is the correlation between tokens and cuneiform signs.

Schmandt-Besserat's *modus operandi* is to rely entirely on perceived similarities between tokens and cuneiform signs. She does not appear to recognize that two-dimensional representations of three-dimensional objects are subjective and culture-specific. I remember once asking a Japanese assistant to put a check mark in a box on a certain form. She looked at the form blankly and asked, "Box?" When I pointed to the square in front of a query she said, "Oh, we would call that a 'mouth'." A more reliable way to establish correlations, or disprove them, is to find some statistical covariance between forms that might be related.

This, after all, is basic cryptography, and the term “decipherment” has been applied to Schmandt-Besserat’s work on more than one occasion.

Before one starts counting things, of course, one should be careful about what one counts. Schmandt-Besserat’s conceptual categories are fuzzy indeed, and she does not even acknowledge the most fundamental problems of archaeological typology. She defines a token as a “small artifact, generally modelled in clay according to one of the following sixteen types” and which she then lists by names such as “sphere,” “cone,” “ovoid,” “animal,” “vessel” [Vol. 1, p. 13]. This comes close to being a tautology and leaves a lot of room for free play, since one of the “types” is “miscellaneous.” Does she not admit the possibility that a small clay object can be something other than a token? Moreover, she allows that tokens need not be made of clay—14% of those in her catalogue, for example, are made of stone or bitumen. Since they may be perforated, one wonders how she distinguishes beads from tokens, or how small an animal figurine has to be before it qualifies as a token. She states that tokens are not amulets: does this mean that there were no amulets? Some forms she classifies as tokens fit quite easily into known categories of objects in Mesopotamia that are not normally classed as tokens: 7:22 [this and subsequent designations of tokens are *type:subtype*, according to Vol. 1, pp. 203–232] and 7:23 are model tablets; 15:21A is a duck weight; 13:35 is a miniature cup; and 14:10 is a model bed. Such items are common in the 2nd millennium, when Schmandt-Besserat says there were no complex tokens.

The definition of a “complex token” is also vague, and this is troubling since she reads great significance into the distinction between “complex” and “plain” tokens. The only limiting factor in her definition is that they “are characterized by an extensive use of markings, either linear, punctuated, or appliqué” [Vol. 1, p. 13]. The photo cited to illustrate this would indicate that one incised line is enough to permit some tokens to qualify. Type 5:1, the simple tetrahedron, does not even have that, but she considers it a complex token nevertheless [Vol. 1, pp. 142, 148].

The author assumes without question that her system of classification has emic significance in ancient Near Eastern cultures, but the criteria by which objects are grouped are obscure even in our own culture. The divisions called “types” are simply rough categories with no analytic significance, although she sometimes makes statements that speciously imply they do. For example, her claim that “it seems evident that all major types of tokens found at large in sites of the early Urban period are found included in envelopes” (1980: 371) masks the fact that virtually none of the specific complex-token forms has been found in an

envelope. The statement is true only in the sense that the simplest member of each artificial, overarching, category she calls a “type” has been found in such circumstances—plain cones, spheres, ovoids, etc.

The units she attempts to correlate with later cuneiform signs are of course not these “types,” but “subtypes” in her terminology. Some “subtypes” are further subdivided with letter designations; the reader is left to guess what 7:22 and 7:22A have in common that sets them apart from 7:23. Criteria for making groupings or distinctions are a problem all along the line. Sometimes, for example, a perforation is enough to distinguish subtypes, e.g., 3:17 and 3:18; and sometimes it is irrelevant, e.g., 3:3. All typologies are to a certain extent artificial and idiosyncratic, but necessary and useful to the human mind to the extent that they approximate some underlying reality. In this case the reality is presumed rather than explained, and the attentive reader has grounds to be uneasy.

The material that *Before Writing* offers for statistical analysis of Schmandt-Besserat’s theories falls a little short of being comprehensive since the author was not able to include tokens from some key sites. The reason offered for the omission of the data from Habuba Kabira, which figure so prominently in Volume 1, is that the material is to be published elsewhere. It seems most curious that anyone would deny permission to an author, who is also preparing this second publication (Schmandt-Besserat in press), to include a list in a bare-bones catalogue like this, particularly when the statistics of her study and even photographs of the materials are used elsewhere in the book. Be that as it may, the catalogue in Volume 2 includes 7412 tokens by my count (which may be a little off), or 91% of the 8162 that she claims to have used in her study. This quantity is enough to demonstrate characteristics of the data set.

The list is hard to work with, in part because it is not consistent in format. The all-important tokens from Uruk are treated differently from the rest, their catalogue having been lifted from another publication (Schmandt-Besserat 1988). This makes comparisons between Uruk and all of the other sites difficult. For example, at other sites, tokens are usually dated to a millennium. At Uruk, we are given a level number instead, sometimes with *terminus ante quem* and *post quem* ranges. Putting these on the same footing as the simple numbers in the non-Uruk entries is arduous, particularly when abbreviations are not explained in the text—not all readers have the complicated stratigraphy and findspot designations of the 70-year history of excavations at Uruk in their heads.

Some of the other entries also raise questions about the accuracy of the list. Quite a few of the tokens from Beidha, for example, are said to come from the 1st millennium

B.C., but site reports on Beidha make no mention of any levels that late. Tokens of identical “subtype” (9:1) from a single level at Can Hassan are dated to different millennia [p. 389]. On pages 318 and 319 tokens under the headings of 10:4 and 10:6 are illustrated as perforated, yet not marked as perforated in the column for that entry. On page 316 subtype 9:6, and on page 327 type 13:39, are marked as perforated but drawn as unperforated. These and other inaccuracies in the few places where the database can be checked against a drawing make one wonder about the reliability of the information in the far greater number of cases where it cannot.

In any event, Schmandt-Besserat herself does not make most of the basic calculations from this database that a reader would expect. The most obvious questions one asks about any type of token are “how common is it?” and “in what circumstances is it attested?” It should have been a simple matter for her to supply the number of examples found with her illustrations of “subtypes” in the third section of Volume 1. The only way I could get this information was to re-type her database into one of my own. The statistics that my computer then came up with are quite informative.

Most of the “subtypes” turn out to be not categories of classification, but unique objects. Some 58% are attested once or not at all in the catalogue, 15% only twice, and a mere 18% (93 of 508) of the “subtypes” are sets with more than four members. When one eliminates the unique pieces from consideration, the number of complex tokens drops dramatically, although one cannot say how dramatically without a better definition of a complex token.

The principle that these tokens can be correlated with cuneiform signs, so basic to all of Schmandt-Besserat’s work, looks even more dubious when one looks at the evidence we have for various commodities in her “decipherment.” Granted the surviving corpus cannot be expected to reflect the precise range and frequency of the meaningful units of the “system,” the sample size is large enough that it ought to give some sense of their proportions. One would expect a lot of sheep to be counted in the Near East, for example, and Schmandt-Besserat’s identification of the token for “sheep” (13:51) has been one of her most persuasive pieces of evidence. It is a disk inscribed with a cross, manifestly similar to a common sign on archaic tablets, a circle with a cross inside, which, in turn, has been linked with the logogram for “sheep” (UDU) in later cuneiform (a square with a cross inside). If this token does indeed mean “sheep,” then the practice of keeping track of livestock, so monotonously prevalent in cuneiform, must have been late in developing; the catalogue shows one sheep in the 7th millennium, three in

the 4th, three in the 1st, and eight with no date—a grand total of 15. There are only two “ewes” (13:54) and three “lambs” (3:14), but that makes them more common than “cows” (14:3) or “dogs” (14:8), for which our early accountants have left us evidence of only one apiece.

In fact, if one looks at the entire list of 50 complex tokens that Schmandt-Besserat feels she can link to pictographs on archaic tablets and thence to cuneiform [Vol 1, pp. 143–149], 18 exist in only one example, and the more common tokens stand for unlikely commodities. “Nails” (6:1), with 60 attestations, start appearing as early as the 8th millennium and turn up more regularly over time than any other form. A token (5:1) that she links to two cuneiform signs, one of unknown meaning and the other signifying “work, build” according to her list, is the most abundant, with 136 examples. This form first occurs in the 8th millennium and, thanks to 42 examples in the 6th millennium, it appears that in the first four millennia more of these tokens were in use than all other types of “complex tokens” put together. Elsewhere in the text [Vol. 1, p. 189], she suggests that this means “one day’s work” or “one man[’s labor].” Is it really credible that these early villagers would leave more evidence of keeping accounts on nails and work days than livestock? In the 4th millennium, when the numbers and variety of complex tokens increase dramatically in her system, the quantities are still minuscule. She equates eleven of her “subtypes” with textiles (3:20, 3:22, 3:24, 3:28, 3:30, 3:32, 3:52, 10:4, 10:9, 10:12, 10:13), but the total of all dated examples of these is only 27. Even assuming that all the undated examples can be placed with these in the 4th millennium, there are still less than 50. With textile production so much in evidence in later cuneiform documentation and so associated with the “great institutions” of later Mesopotamia, of which the buildings in Uruk where many of the tokens were found are clearly forerunners, one would expect a great many more. Numbers like these do not merely suggest the association of specific complex tokens with cuneiform signs is a case not proven—they virtually disprove it.

With this gone, the theories of accounting and numbers to which *Before Writing* devotes so much space also collapse. There is no reason to assume that tokens stood for specific commodities in ways that remained constant over the millennia in all parts of the Near East. It is less strained to suggest that various people at various times exploited the few geometric shapes that are relatively easy to make in clay and used them as counters or for whatever other purposes they, as individuals, chose. These “plain tokens” are the only forms that are at all common, and if they appear similar to early numerical systems on bullae and

impressed tablets, it is because there are not many basic geometric shapes that one can make. With regard to numbers, bullae, and accounting, we are essentially at the stage to which Amiet brought us in 1966, with calculi in bullae and pictorial signs appearing after a phase in which tablets were inscribed with numerical signs.

One question does remain, however. Schmandt-Besserat has maintained there was proliferation in the variety and complexity of small clay objects as urban society emerged in Mesopotamia. It needs to be determined whether this phenomenon, not without interest, is an artifact of the material record or simply the practices of archaeologists. If what she calls “tokens” are simply a miscellany of various things like beads, calculi, amulets, buttons, and so forth, why do the numbers fall off so dramatically after the 4th millennium? Many are probably still around, classified in more traditional ways, but there does appear to be a fall-off in the numbers of small clay objects. Perhaps their functions were taken over by larger clay figurines and ornaments made of other materials, like metal. This question cannot be resolved without much more rigorous scholarship than we have had to date, and in any event it almost certainly has nothing to do with the creation of visible speech.

The idea that cuneiform signs grew out of depictions of tokens was easy to understand and to make understandable to others. Illustrated by a few specious examples, like “sheep,” it has been ballyhooed widely and embraced by many. Skeptics, like Lieberman (1980) and Nissen (1986), have not been able to prevent it from becoming widespread, and an early review of *Before Writing*, Volume 1, which rhapsodizes that the book is a “new, scrupulous and exciting account of how writing came . . .” and that its author is “spinning a tight web of inference from abundant evidence” (Morrison 1992: 132) suggests the chimera may be hard to dispatch. But the imprecision, flawed methodology, and damning data of these volumes undermine Schmandt-Besserat’s basic theories, however intriguing and seductive they may be. The primary contribution of *Before Writing* is to supply material for their demolition and to remove debris from the landscape, so that the ground will be prepared when a new theory for the origins of writing does emerge. At this point, the works of Denise Schmandt-Besserat should be studied as an example of a publishing strategy—and not for anything else they tell us about writing.

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