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Beyond speech.
Advocating a non-logocentric view on the evolution of cuneiform writing

Dedicated to the memory of Robert K. Englund
– a great scholar and inspiring friend

Introduction

The relationship between 'text' and 'image' has received renewed interest during the past few decades, and not only in the field of Ancient Near Eastern studies.[1] Even in the limited scope of Mesopotamian studies, a number of (mostly) collected articles have appeared. Up to now this relationship has often been presented unevenly.[2] Art historians use texts for suggested interpretations; and philologists and historians search for images that visualize names and texts, especially narratives. The main interest of both endeavors might be termed the "illustrative approach",[3] which I will argue in the following chapter is both useful and detrimental.

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1   This was the topic of the *61e Rencontre d'Assyriologique Internationale* in Geneva and Bern in 2015; see Attinger et al. 2018.

2   A remarkable exception is David N. Gimbel's unfortunately unpublished 2002 PhD thesis from Oxford (supervisor J. Baines). He discusses not only the connection and evolution of the pictorial systems and the writing systems in both, Early Mesopotamia and Egypt, but he also includes a discussion on the pertinent observations from the cognitive sciences. I wish to express here my gratitude to David for numerous fruitful discussions on these topics.

3   Even when depictions 'illustrate' texts, the correspondence is limited (Michalowski 1990; Cooper 2008; Crawford 2014; Sonik 2014). Numerous books and articles are devoted to this subject; I will simply cite the recent articles by Nadali 2019 and Payne 2019.

Both modes of representation produce rather distinct corpora.[4] Traditions, however, sometimes hinder a better understanding of this connection. Indeed, the relation between visual representation and utterances is, to say the least, faint and problematic. This should not come as a surprise: the connected two senses – faculties of sight and hearing possess quite different properties.[5]

> Listening to speech or music is timebound: unless recorded, it 'evaporates' in the air, or, to use another metaphor, it is only smoke and mirrors. The advantage of speech in communication is its unparalleled precision. Seeing, on the other hand, is space-bound: in viewing a material (permanent) object, the effects of time are small.[6]

Moreover, the sensory organs of eye and ear, even from a fixed location, can be moved, the head and ears turned and the eyes also lifted or lowered. And cognitive research has shown that visual and sound stimuli are processed in different regions of the brain (for which, see S. Dehaene's seminal book *Reading in the Brain* [2009]). Hence the visual perception of the written and its productive force must not be underestimated. The brains of literate humans have specialized regions for dealing with written words[7] – although Dehaene's 'letterbox' area is stimulated only by written words and not by other visual patterns, nor even by word sound. The evolution of this brain area (located in the ventral visual area) emerges from the hard-wiring between visual and aural perception.

How reading draws on visual and auditive facilities is now – as far as I am able to follow the literature – fairly well understood[8] and it is our working hypothesis that similar processes might have contributed to the evolution of writing.[9] Related studies have further demonstrated that the perception of numerosity and then counting is also processed independently and apparently plays a major role in the evolution of abstract cognition.[10]

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4   See Cooper 2008. Note that Baines 2007 divided his book in two distinct domains, e.g. the written and the visual culture. See further Selz – Niedermayer 2015; Selz 2014.

5   Cf. Selz 2019.

6   Selz 2019, 369.

7   The evolution of the visual word form area in the brain must also be considered in historic context: recognising visual patterns and understanding spoken language are prerequisites for learning to read and write.

8   See Dehaene 2009; Dehaene – Cohen 2011; Carreiras et al. 2014.

9   Overmann has carefully studied the interface between cognition and the evolution of writing, including number concepts: see Overmann 2016; 2018a; 2019.

10 Coolidge – Overmann 2012; Chrisomalis 2010 and 2013.

The 'logo-syllabic' hypothesis

The role of the 'word form' in the evolution of writing is still widely debated. The earliest known writing systems evolved or were invented in the later 4th millennium in Egypt and Mesopotamia.[11] Related, and apparently younger systems of writing include Luwian hieroglyphic,[12] and scripts by the Maya[13] and Chinese.[14] The designation of these systems as 'logo-syllabic writing' is still widely used and follows a well-trodden path: different opinions are often harshly rejected.[15]

Concerning the Mesopotamian situation, Gelb wrote in 1963:

> The signs used in the earlier Uruk writing are clearly word signs limited to the expression of numerals, objects, and personal names. This stage of writing we call logography or word writing and which should be sharply distinguished from the so-called 'ideography'.[16]

This statement is possibly based on Falkenstein's notion of 1936: "Die Frage, ob die ältesten Belege der Schrift Babyloniens noch Reste einer [...] Vorstufe der Wortschrift, der 'Ideenschrift', erkennen lasse, ist ziemlich sicher mit nein zu beantworten".[17] Similarly, Boltz states that "claims about the exotic, even bizarre, nature of the Chinese script, and its ostensible 'ideographic' basis, are naive and untenable [...] Chinese writing, like writing everywhere, is simply a graphic device for representing speech." And: "The notion of any kind of a script as independent of language seems on the face of it to be a sheer impossibility, and yet this is an explicit claim of the 'concept-script' advocates".[18]

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11   Both systems share features with the Chinese and Mayan scripts.

12   A comparable invention is the Luwian hieroglyphic script; cf. Payne 2010; 2014; 2015.

13   Wichmann 2004; Coe et al. 2005; Houston 1990; Boot 2010.

14   Boltz 1994; Handel 2016; 2019.

15   Sumerian cuneiform, in contrast to Chinese, only hesitatingly, if ever, developed into "a fully functional writing system [which was] [...] able to represent all elements of spoken language, including such things as grammatical particles that are not amenable to pictorial representation. There were two basic techniques for repurposing, or extending the usage, of a graph: *phonetic adaptation* and *semantic adaptation*", Handel 2019, 38.

16   Gelb 1963 [1952], 65.

17   Falkenstein 1936, 31. Of course, Falkenstein knew of the problems of homophones which led him to state: "Mit der Ausbildung der Determinative versucht die Schrift, den in der Vieldeutigkeit der Wortzeichen beruhenden Mangel in etwas zu beheben" (Falkenstein 1936, 35).

18   Boltz 1994; 1994, vii, 8. Boltz quotes Du Ponceau 1838: xxiv: "An ideographic system of writing is a creature of the imagination, and [...] cannot possibly exist concurrently with a language of audible sounds".

These statements, however, seem to be somewhat circular, being based on the notion that writing is (always) glottographic or, at least a fully functional system to render speech.[19] As we will see, this 'logocentric' hypothesis blurs the extant Mesopotamian facts and might even be challenged with regard to the early Chinese system.[20] For instance, as Bottéro wrote in 1992, "a pictogram can relate to other realities, attached to the same object by mental processes that are more or less founded in reality, or downright conventional, and perfectly well known and utilized in the representation of art".[21]

There is much at stake here. The picto- and ideographic origin of (some) signs – to which I subscribe – presupposes a non-arbitrary relation to 'things or notions' independent of any linguistic mediation.[22] In a similar way, the process of sign-formation or the development of specific signs attest specific ways of graphic alteration often with iconic implications; they have no linguistic foundation.[23] The differences between glottographic and non-glottographic writing was clearly stated in Hyman:

> the relation between glottographic and non-glottographic writing, associate the former with the act of reading and the latter with verbalizing, and [we] conclude by suggesting that glottography is best viewed as a single subsystem of written language.[24]

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19 This notion has been systematically elaborated for the Chinese and related writing systems by Handel 2019. However, I would argue that the underlying 'glottographic' concept is insufficient for correctly understanding the evolution of the cuneiform script.

20 Cf. Handel 2016 concerning Xǔ Shèn's Huìyì. This has been demonstrated by various conference contributions, perhaps in the most challenging way by Martínez-Ruiz: 2013 on Kongo Graphic Writing; see further Battestini 2000.

21 Bottero 1992, 76; quoted in Hyman 2006, 240 with ref. to Selz 2000, 175 in fn. 37.

22 Cf. Boltz 194, 4 fn. 2. In his definition of 'writing' Handel 2019, 5 also dismisses all non-glottographic features from the beginning. For Mesopotamia, a special area of such features (infelicitously termed, I think, as 'non-textual') were discussed in Wagensonner 2009. In the background of his discussion is the question of whether language has to be considered as semiotic prototype or just as one sign system with specific codes in various types of scripts.

23 Most important in this respect was Glassner 2000a and 2000b, 161–214; cf. Selz 2000 and Krispijn 1991–92. See further Selz 2013. The underlying problem of early lexical lists were addressed in Wagensonner 2016, esp. 115–155. However, a work on the 'grammar' of cuneiform sign formation – such as Myers 2019 for the Chinese script or Boot 2014 for Maya – is not yet in sight. How the Mesopotamians handled this issue is demonstrated in Gong 1993 and 2000.

24 Hyman 2006, 231. The boundaries between both are fuzzy: glottography has to be differentiated from 'pure' phonetic renderings which in scripts hardly exist outside academic notations. Daniels 2018, for example, excludes non-glottographic writing from his overview. And note also Glassner 2000b, 217–230 who writes (optimistically) on p. 230: "On était accoutumé à ranger tout système d'écriture non dans la linguistique, mais dans la sémiologie. [...] il appartient simultanément non à un, mais à deux mondes, celui de l'image et celui de la langue."
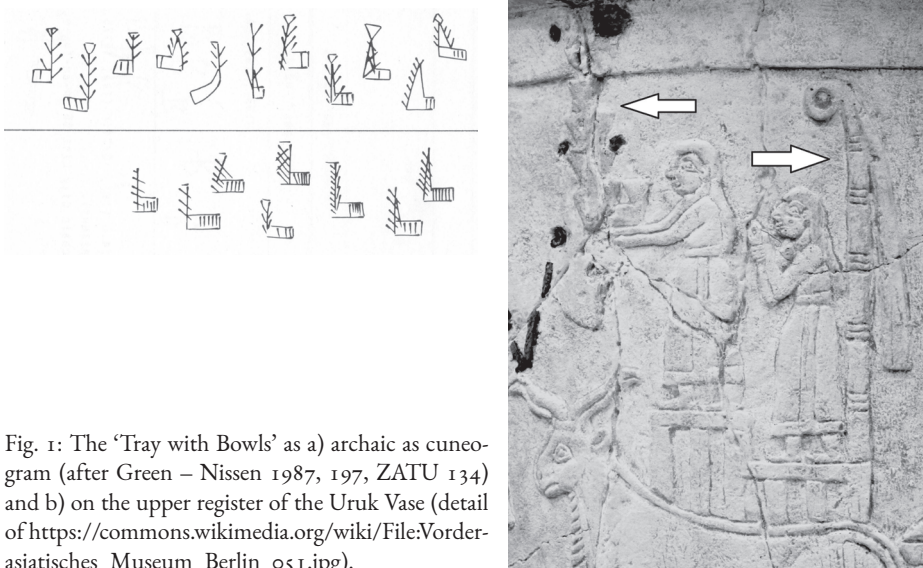
Fig. 1: The 'Tray with Bowls' as a) archaic as cuneogram (after Green – Nissen 1987, 197, ZATU 134) and b) on the upper register of the Uruk Vase (detail of https://commons.wikimedia.org/wiki/File:Vorderasiatisches_Museum_Berlin_051.jpg).

In fact it is very likely, but difficult to prove, that the so-called logograms of the earliest Mesopotamian writing systems are non-glottographic or purely semasiographic.[25] The assumption that the Sumerian language stands behind the first proto-cuneiform texts is still being debated,[26] and, importantly, it has so far been impossible to decide whether or not one 'logogram' corresponds exactly to one word, as defenders of the logographic interpretation must contend. There are in fact indications that such signs do not because many proto-cuneiform signs convey a meaning which does not correspond to the icon referent: the EN (ZATU 134) sign – meaning "lord" – almost certainly depicts the so-called bowls' tray, (German "*Bechertablett*", see **Fig. 1**);[27] the MUŠ$_3$-sign (ZATU 374), the "ring post with streamers", probably de-

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25   See Selz 2020b. In this workshop "Spoken Words and More" at the 64th RAI in Innsbruck M. Krebernik argued in "The Relationship between Language and Early Writing" along similar lines. I quote from his abstract: "Cuneiform writing in its fully developed stage was glottographic, i.e. it represented words and phrases of natural languages. The cuneiform system was, however, not created for this purpose. [...] The cuneiform signs seem to have been conceived as representations of objects, quantities, functionaries and operations rather than as representations of lexemes and sounds."
     An overview and discussion of the taxonomies of writing systems is presented in Sproat 2000, 127–156.

26   Englund 2009, 6–8 with fn. 14 and 18; also, Krebernik 2007; 2013 and see here fn. 40.

27   The "bowls' tray" ("*Bechertablett*") in the storage house scene in the upper register of the Uruk Vase is clearly related to the cuneiform sign EN for "lord"); in consequence Hockmann 2008, 327 with fn. 7 discusses other allegedly related types of proto-cuneiform signs. ZATU-numbers according to Green – Nissen 1987.
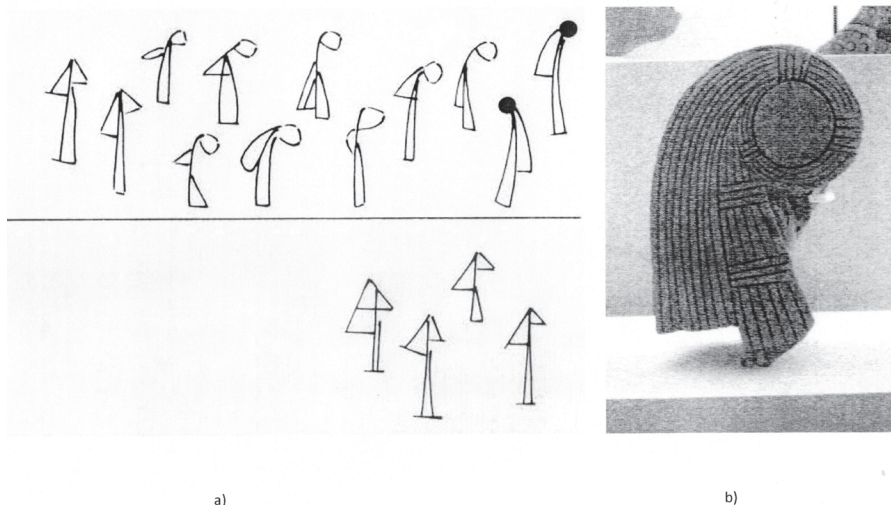
Fig. 2: The "Ring Post with Streamers" a) in script, and as b) an artefact (after Green – Nissen 1987, 248, ZATU 374; Wagensonner 2009, 59 fig. 7c)

picts an essential element of a "roller door" and very early is also a sign for the Venus goddess (see **Fig. 2**).[28] And GURUŠ (ZATU 247), the image of a "sledge," or AL, "the hoe" (ZATU 24), can refer to "workmen".[29]

The understanding of the underlying processes is far from being naïve. Johnson shows how complicated and sophisticated such processes could have been.[30] Besides the mostly administrative documents from the earliest phases of Mesopotamian (proto-)cuneiform writing, a larger number of word lists ('lexical lists') are preserved in which the scribes organized their environment lexically, presumably in part to systematize the teaching of cuneiform. The Uruk period lists ArLu A and the much shorter ArOfficials have been thought somehow related to the socio-political organization of the Uruk period.[31] Accordingly, their headings, NAMEŠDA and UKKINa, presumably refer to the top positions. Both these initial entries are graphical variations of the signs ŠITA$_{ a1}$ and UKKIN$_a$, which "are iconic representations of drinking vessels, but both signs also include an additional vertical wedge that distinguishes

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28 See Selz 2020a, 415; 422.

29 On these signs see Englund 2009, 8–9 fn. 19.

30 Johnson 2015; 2016; 2019; D'Anna et al. 2016.

31 See Selz 1998 and Johnson 2015; further Selz 2020b (chapter 3.5.2); also Charvát 2012 and Bourguignon 2012. A highly promising attempt to place the titles listed in *Officials* in their *administrative context* was undertaken by Lecompte 2018.

Vessels	SILA$_{3a}$	UKKIN$_b$
Related portions of meat or fish	ŠITA$_{a1}$	UKKIN$_a$

Fig. 3: Vessels, officials, and portions of meat or fish (after D'Anna et al. 2016, 11; courtesy D'Anna and Johnson)

these signs from the proto-cuneiform signs that actually refer to the vessels themselves" – that is SILA$_{3a}$ and UKKIN$_b$. The natural assumption would therefore be that the possession or/and use of such drinking vessels somehow relates to the social position indicated by the content of these lists. The variants of the basic signs (with one additional stroke), however, designate portions of meat (or fish) (cf. **Fig. 3**).

The complicated semantic transfer from the basic sign forms ("vessels") to those in the aforementioned lists is the described by Johnson:

> I assume here that the addition of a vertical wedge to SILA$_{3a}$ is meant to designate 'the type and amount of meat or fish that is appropriate to someone who receives a SILA$_{3a}$ vessel of beer or dairy fats (on the occasion of a festival)' and likewise that the addition of a vertical wedge in the body of the UKKIN$_b$ sign is meant to refer to 'a portion of meat or fish that is appropriate to someone who normally drinks from the UKKINb vessel'. [32]

These examples nicely demonstrate how the evolution of writing and the evolution of the social world are intertwined[33] and open a promising new path of script re-

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[32]   Johnson 2015, 198–199.

[33]   I agree with Johnson 2019, 78: "In the same way that Friberg's typology of bricks defines the potential of Mesopotamian architecture or Damerow and Englund's work on beer and bread production defines the Mesopotamian rationing system, I would like to suggest that meat distribution defines elite institutional hierarchies in Mesopotamia. Moreover, in doing so, the distribution of highly valued goods in the context of diacritical feasts provides the essential link between what we might call primary economic activities (baking, brick-making, and butchering) and the second- or higher-order notational and managerial practices that sought to harness these primary activities to macro-social projects of one kind or another".

search.[34] A somewhat similar case is attested by the Uruk period form of SANGA$_2$ (saĝa$_2$) "a purification priest", that is ZATU 506 (see Rubio 2013). Iconically, the sign is probably a combined sign of the graphs for [[CLOTH] COVER] + [JAR] like šagan "flask" ⟨⊞⟩ [LID/COVER]+[POT STAND] which stands metonymically for this priest.

In a broader scope, the process of proto-cuneiform sign formation shows many elements of conscious reasoning.[35] Therefore we suggest that the hypothesis that a logogram or glyph represents a word is inconsistent with the observable stages of the emergent Mesopotamian script(s) and that the well-known polysemy of cuneiform signs accompanies the birth of writing and cannot be judged as a later development (see below).[36]

A consequence of this is the possibility that (some of) the earliest signs may be understood independently of a given language. Indeed, in the visual arts we occasionally meet visual 'writings' which – in a given cultural context – can be 'read' as narratives independent of any specific language.[37] The best, though rather complex, such narrative is on the Uruk Vase (see **Fig. 8**).[38] One might link such readings to ekphrastic procedures, that is the verbal representation of the visual. Visual representations – as it should be clear from its beginning – are often and sometimes intentionally ambiguous and less precise than speech (and glottography).

The language behind the proto-cuneiform is another matter. Englund in 2009, after surveying a number of alleged linguistic features of the proto-cuneiform corpus, was very sceptical that this language was Sumerian.[39] I have repeatedly advocated a somewhat Solomonic way out: Sumerian is, I contend, involved in the evolution of proto-cuneiform, but it is by no means certain that it is the only language involved or that the proto-cuneiform documents are to be read in this language.

34   The archaic list "Pots and Garments" (ArPoG) starts with numerous iconic representations of vessels; see now Wagensonner 2020, 21–24.

35   See, for example, Glassner 2000a, 2000b, 161–2015; Krispijn 1991–1992; Selz 2017.

36   For the Chinese script similar phenomena are discussed by Handel 2019 under the heading *phonetic adaptation* and *semantic adaptation*.

37   Contrast this with observations made by Civil 2013, 17–18: "When the scribes attempted for the first time to write down narrative texts, they simply enunciated the participants of the narrated event, leaving out the representation of predicates and of the anaphoric pronouns that tie together various textual elements and give continuity to a narrative. The bare enumeration of the core arguments of the predicate (actor and objects), including perhaps some circumstantial complement, but without making explicit the predicate itself, can only function as a mnemonic trigger that evokes the full plot in the addressee's mind."

38   Schmandt-Besserat 2007, 41–46 devoted an entire chapter to this artefact, "The Uruk Vase: Sequential Narrative."

39   For the Uruk IV and Uruk III type tablets Englund's CDLI always has "language undetermined". – Less sceptical is Rubio 2005 who reviewed the available arguments in the context of a "linguistic landscape." For a recent review of Sumerian in Uruk III tablets see Keetman 2020.

Such expectations may be wrong right from the beginning and I would like to apply Baines' notion concerning the Egyptian situation to Mesopotamia: "There could have been no initial expectation that what was written would correspond with what was spoken. Language was not the original chief focus of writing [...]".[40] Instead, proto-writing "is, in essence, an administrative system and does not directly correspond to spoken language".[41]

The 'language issue' may be in part resolved by the proven use of 'rebus type' writings based on (partial) homophony (such as the ARROW, Sumerian /ti/, for LIFE/LIVE, Sumerian /ti(l)/), or the related use of a given syllabic value of a sign as free (functional) morphemes, e.g. in Sumerian nominal cases.[42] There is growing evidence that some of the names for persons in the earliest cuneiform[43] are forerunners of later Sumerian names and their readings warrants the rebus principle. In addition, a number of these administrative documents show at the end a 'transaction formula' which – in comparison to later usages – may contain Sumerian words: the frequently attested GU_7 (= ZATU 235)[44] may mean "consumption" or "ration" while the use of the signs BA[45] and GI[46] can perhaps be linked to their much later use in transaction formulas featuring the Sumerian verbs ba and gi_4, and designating distribution or return of goods respectively.[47] But the application and interpretation of these transaction terms remains largely speculative and they cannot yet prove that the entire texts are written in Sumerian, as already Englund has demonstrated.[48]

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40   Baines 2012, 29.

41   Veldhuis 2012, 4.

42   Note that Morenz 2004, 42-50 describes a similar function of the rebus principle and of autonyms in the evolution of the Egyptian script.

43   See Krebernik 2002 and 2013. Similar proposals have been made by Gianni Marchesi in the workshop "Spoken Words and More" at the 64th RAI in Innsbruck. In the abstract of his talk "Back to the Sumerian Problem: The Issue of the Language behind the Proto-Cuneiform Texts" Marchesi states, "Contrary to what is often repeated, not only Sumerian words but also *bona fide* Sumerian personal names consisting of Sumerian sentences can actually be identified in these early texts."

44   W 20274, 36; W20274, 32; W20274,23**.

45   W 20676,5**; W 20676,7; W 21300,2; W 21360,2.

46   W 20246,2.

47   However, the subscripts of several texts combine GI.GI with BA and even with BA and GU7, as in W 20511,11. Moreover, there is not a single secure attestation of the use of the sign for "reed" (GI) for the homonymous Sumerian verb /gi/ "to return", even in those cases where the sign cannot stand for "reed". Therefore, the interpretation of these transactional terms remains largely speculative and certainly cannot be used as proof that the texts are written in Sumerian, as Englund has already emphasized.

48   Englund 1998a, 70-71. For the supposed BA and GI 'offices' see Johnson 2015, 187-190.

How writing started – or why writing was not invented *ex nihilo*

Whether and in which respect the famous 'tokens,' which after the Neolithic period are attested at numerous sites all over the Near East, may reflect an earlier stage of pre-writing is less clear than is often suggested. Their vast geographical and chronological distribution makes it rather unlikely that they connect to just one system. They relate to the evolution of proto-administrative accounting[49] – that is, to the broader 'number sense',[50] rather than to proto-sign forms.[51] The best guess so far is that these token were counting devices, *Zählsteine*, which functionally may relate to early abacuses.[52] However, for the late Uruk situation a connection of the token system(s) to the sealed number tablets and other 'numeric-ideographic' tablets[53] as well as specifically to the sealed hollow spherical clay balls (*bullae*) seems beyond doubt, an idea first formulated by Pierre Amiet (and Maurice Lambert) (see **Fig. 4**).[54] These *bullae* functioned as envelopes and contain tokens. Sometimes the shape of the tokens was additionally imitated on the surface of these clay balls. The sealings most probably indicated the institution(s) or the officials responsible for the accounting. Such clay balls seem to have been in use right down to the middle of the 2nd millennium BCE.[55] Apparently, the aim of the underlying procedure was to prevent any manipulation of accounts during the process of information transmission.

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49 The chronological order of these proto-forms is nicely chartered in Woods 2010, 47; see also Krispijn 2012, 181–182.

50 The still extant notion that an abstract number concept was not yet developed in the earliest cuneiform documents, as repeatedly advocated by Englund and Damerow (Damerow – Englund 1987; Englund 1988; Damerow 1996b; Damerow et al. 1996) may now be related to the evolution of cognition in the ways Overmann 2018a and 2018b has argued, based on the Material Engagement Theory developed by Malafouris 2010b; 2010a and 2013.

51 Schmandt-Besserat's hypotheses on this matter received some criticism from a methodological point of view; cp. Damerow 1993, Englund 1993; 1998b; Michalowski 1993; see further Woods 2012. The most critical point in Schmandt-Besserat's hypothesis is her equation of specific (complex) token shapes with specific cuneiform signs. The earliest shapes were simple cones, spheres, cylinders, ovoids, disks, and polyhedrons and it seems more than likely that shape was arbitrary. Nevertheless, there are a number of tokens – contemporary with other proto-cuneiform documents – which clearly show overlappings of token forms and cuneiform glyphs; see Wagensonner 2009.

52 The existence of abacuses or similar devices in Ancient Mesopotamia is likely – but still disputed, cf. Dercksen 2015.

53 On these see Cooper 2004, 74–75. These tablets document a decisive step forward in the evolution of proto-cuneiform: they contain mixed numerical notations with one or two ideograms; see Englund 1998a, 51; 53; 214–215.

54 Amiet 1966. This was emphasized by Michalowski 1993 and Woods 2012; see also Hirst 2020.

55 See Oppenheim 1959; Abusch 1981; Woods 2012, 45–50; MacGinnis et al. 2014.
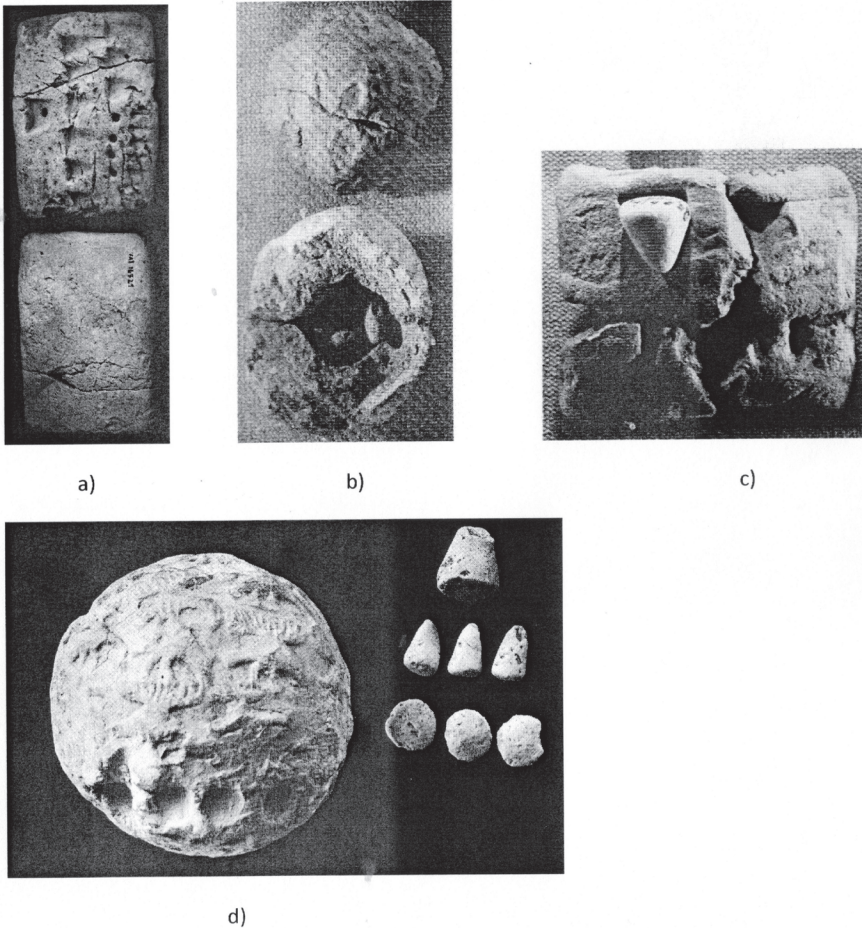
Fig. 4: a) number tablet; b) spherical clay ball with token inside; c) sealed number tablet with token; d) spherical clay ball and tokens (Uruk) (W 11040 https://cdli.ucla.edu/dl/photo/P001779.jpg, courtesy Englund; Wagensonner 2009, 58 fig. 4a. fig 4b; Nissen et al. 1990, 49, courtesy Nissen).

They may be conceptually be related to the tags attached to goods sent from one place to another (**Fig. 5**).[56]

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56 Such (often pierced) tags are known from the entire Near East; cf. Selz 2020b (chapter 3.4.1.); Woods 2010, 71–72; Wagensonner 2009. For similar tags from Abydos, Dreyer 1998 has suggested a syllabic use of some signs which seems to be now widely accepted by Egyptologists. See MacArthur 2010, 118–121 and Seidlmayer 2012 (both arguing for a logocentric definition of writing). See also Morenz 2004, 39–42.
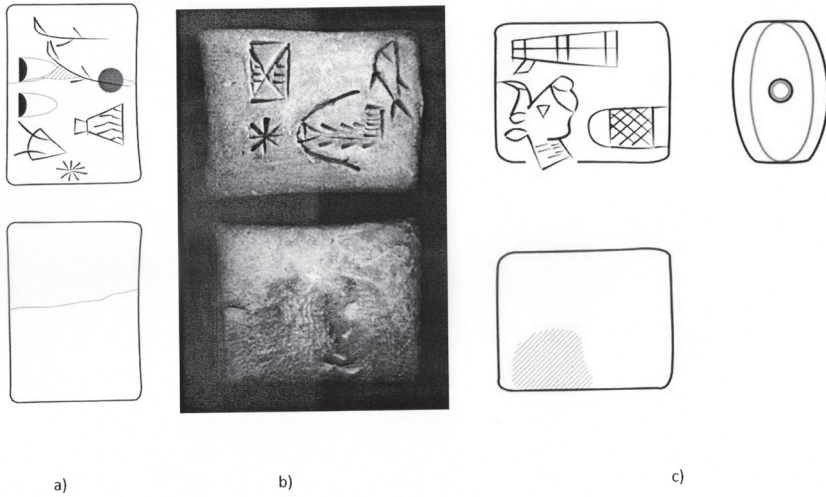
Fig. 5: Tags from Uruk (a-c); only c) is a pierced specimen (W 09123,b https://cdli.ucla.edu/dl/line-art/P001023_l.jpg; W 15662 https://cdli.ucla.edu/dl/photo/P002208.jpg; W 15658 https://cdli.ucla.edu/dl/lineart/P002207_l.jpg).

Originally the logographic-ideographic signs[57] of cuneiform script were partially grounded in iconicity – that is, with a non-arbitrary relationship between the shape of a graph and its associated meaning(s). However, as demonstrated by the process of sign formation ('abstract' and 'manipulated' signs are attested even in the earliest stages), in contrast to other comparable writing systems such as Egyptian hiero-glyphs, cuneiform script increasingly lost its iconicity.[58] Even classification in script applies principles quite distinct from those used in visual representations.[59] This is corroborated by the generally accepted notion that among the earliest sign forms are also a considerable number of 'abstract' signs for which a pictorial origin is un-

57 Contrary to Falkenstein and others (see above) who oppose the notion of ideographic elements (*Ideenschrift*) in early cuneiform writing (Falkenstein 1936, 31–32) and sometimes even deny the existence of rebus writings (cf. Selz 2017), we contend that logographic and ideographic elements in the earliest script surface at much the same time.

58 This is a well-known fact, though the scribes of ancient Mesopotamia may have seen more iconic references than we assume. The phenomenon of 'secondary iconization' further supports this hypothesis; see Selz – Pfitzner 2019.

59 Compare the well-known example of the divine classifiers: the star icon in writing and the horned crown in the visual arts both indicate divine status; see Selz 2008. In Egypt the connection between depiction and script seems much closer and, as the use of the unpronounced classifiers demonstrates, non-linguistic elements played an important role in writing; see Goldwasser 2002; 2006; Goldwasser – Grinevald 2012, and Selz et al. 2017.

likely.[60] The notable discrepancies between Egyptian and Mesopotamian systems might relate to the early partial loss of iconicity in the Mesopotamian cuneiform script. Nevertheless, script, being by definition a visual means of communication, shows overlapping in its sign formations with several iconic elements of the visual arts – which are, however, as of yet little understood and researched.[61] I will return to this topic below.

Early polysemy of signs?

The application of homophonic principles for reading cuneiform glyphs, that is the rebus-principle, is important for understanding the evolution of writing but does not yet transcend the logographic principles. However, whenever cuneiform signs are used as polysemes we are confronted with a feature which does not fit into the (simplified) notion of a logogram. It may be difficult to identify any polysemic use of signs in the proto-cuneiform stage; however, that polysemy was a salient principle of the script by the 3rd millennium is beyond doubt: As soon as the sign for MOUTH (which evolved by marking the mouth area in the sign for HEAD) designates not only "mouth", Sumerian /ka(g)/, but also the Sumerian verb /dug/ "to speak", 'logograms' are indeed semasiograms.[62] Given the salience of the semasiographic form of writing in later Sumerian cuneiform, it seems reasonable to posit the existence of this principle already in the earliest stages of the script.[63]

The pictogram of a foot (sign name DU) evolves into the standard cuneiform (which, surprisingly, is never used for the Sumerian /ĝiri/ "foot") and can possess the following readings and meanings (according to ePSD):

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60 Falkenstein 1936, 26 suggests besides groups with clear iconic referents – in complete or abbreviated form – a third group of abstract symbolic signs (*abstrakte Symbolzeichen*). For a renewed account on the pictographic origin of some signs and the loss of curvilinear lines see Woods 2010, 36–37. A more detailed overview on the chronology of the (sealed) spherical balls and the numeric-ideographic tablets is given in Boehmer 1999, 120–121.

61 Rare exemptions are the writing of the cities' sealings (Matthews 1993; 2013) and the Uruk Vase (Hockmann 2008).

62 Handel 2019, 40 remarks concerning the Chinese writing system and its adaptation to other languages: "semantic adaptation has been extremely common in the application of Chinese characters to the representation of other languages [but] in the internal history of the Chinese writing system itself […] it most probably only occurred in the earliest stages". The cuneiform situation is complicated for two reasons: the earliest texts are not yet fully intelligible and semantic plays and speculations are met everywhere in the so-called lexical lists.

63 Semasiographic writing establishes, of course, a close tie to visual representations.

DU:[64]

de [BRING] wr. de$_6$; [ga; de$_3$; ir; de$_2$] "to bring, carry" Akk. *babālu*

du [GO] wr. du "imperfect singular stem of ĝen [to go]" Akk. *alāku*

ere [GO] wr. [re; er; e-ra]; er$_x$(|DU.DU|); re$_6$; re$_7$ (DU*over*DU); [er-re; i-ri] "perfect plural stem of ĝen [to go]" Akk. *alāku*

gin [ESTABLISH] wr. [gin$_6$; gi-na; gi-in; ge-en]; gin "(to be) permanent; to confirm, establish (in legal contexts), verify; (to be) true; a quality designation; medium quality" Akk. *kânu; kīnu*

gir [RUNNER] wr. gir$_5$ (DU-*šeššeg)*; gir$_7$ "runner, trotter" Akk. *šānû*

gub [STAND] wr. gub "to stand; (to be) assigned (to a task)" Akk. *izuzzu*

gub [~SHEEP] wr. gub "a designation of sheep or goats"

ĝen [GO] wr. ĝen; [ma] "to go; to flow" Akk. *alāku*

kin [SICKLE] wr. [^{urud}kin]; gin; [kin$_x$(|ŠE.KIN|); ^{urud}ŠU.KIN] "sickle" Akk. *niggallu*

kur [ENTER] wr. [kur$_9$]; kur$_x$(DU); [kur$_x$(LIL)] "to enter" Akk. *erēbu*

ra [CVVE] wr. ra$_2$ "(compound verb verbal element)"

ša [CVVE] wr. ša$_4$ "(compound verb verbal element)"

tum [BRING] wr. [tum$_3$]; tum$_2$ "imperfect singular stem of /de/ [to bring]"

tum [SUITABLE] wr. tum$_2$ "to be suitable"

tum [UNMNG] wr. tum$_2$; [tum$_4$] "..."

Admittedly, this brief collection lacks any chronological frame and is therefore not so informative regarding the evolution of the denotations of the sign DU. It demonstrates, however, the potential of semasiographic writing, which is clearly attested in many instances as early as the Early Dynastic period.[65] What is suggested here is that the reference of a 'logogram' to a specific linguistic unit, a word, is a development and not the starting point within the proto-cuneiform script. Both,

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64   Alternative graphic or phonetic forms are given in [brackets].

65   For the Chinese script Handel 2019, 41 posits an evolution from logogram to ideogram: "A logogram that is fully dephoneticized would become an ideogram, i.e. a representation of meaning that is no longer connected to specific linguistic units in any conventionalized way; it would therefore cease to be a graph of a writing system [...]." Both of the processes described above, phonetic adaptation and semantic adaptation (or indexical usage), result in polyvalency of graphs or, phrased another way, in ambiguity of intended representation. While some degree of ambiguity is a tolerable and tolerated feature of all writing systems (and indeed, ambiguity is present in all spoken languages which writing systems represent), the development of the Chinese writing system demonstrates that script users made deliberate adjustments to reduce polyvalency."

homophony and polysemy alike contributed to the evolution of proto-cuneiform and remained productive throughout the entire history of Sumerian cuneiform.[66]

Developments in the visual arts and their relation to writing

As indicated above, although the iconic origin of a larger number of cuneiform signs is beyond doubt, iconicity plays minor role[67] if compared with the Hieroglyphic script, – which is true also of the early stages of the Chinese script.[68] However, it is likely that more signs than we usually think possess iconic references, though identifying them is difficult. Several such signs in synecdochic or indexical usage provide a clear link to depictions and thus demonstrate the connections between script and image. The clearest examples may be the Uruk Vase (**Fig. 8**), the Archaic Cities' Sealings,[69] and many other cylinder sealings.

The visual two-dimensional representations have two modalities: the emblematic, and the linear arrangement of pictorial elements. The first one might, according to Watanabe, be termed the "centric" arrangement, and the second may be compared to the "continuous" style of narration introduced to art history by the Viennese scholar Franz Wickhoff.[70] By definition, visual narratives are linked to the

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66   When such 'logograms' were used in the context of other languages their polyvalency played a secondary role, if any. This is demonstrated by the use of such logograms in Akkadian and Hittite texts. The logographic principle applied here, as argued in Selz 2018, is best exemplified by the Eblaitograms (and Akkadograms and Hittitograms). In such cases we see logograms (in the precise sense) usually reflecting fossilized writings or spellings of a word.

67   'Realistic' iconic depictions in Cuneiform are comparatively rare. Much more numerous are abbreviated icons ("die ihr Vorbild in stark abgekürzter Form wiedergeben," Falkenstein 1936, 26). I think this is a not very convincing description and refers only to one variety of this type of iconic sign (e.g. the animal head representing the lexemes for different species). I suggest calling this group of signs synecdochic / metonymic or indexical, comprising not only 'abbreviated icons' in Falkenstein's sense, but also the numerous standard or vessel types designating much more than the represented item.

68   Cf. Handel 2019, 42 with n. 21; 89 and 267.

69   Illustrated in Wagensonner 2009, Fig. 8a–c.

70   See Watanabe 2004; 2014, 350–363; see further Sonik 2014. – Circular composition on stamp seals such as the specimen from Tepe Gawra analysed in Schmandt-Besserat 2007, 30–35 are probably linked to the emblematic or centric mode of visual representation. However, Schmandt-Besserat remarks: "The glyptic art of the Gawra period, contemporaneous with the advent of writing in Mesopotamia, marks the beginning of visual narratives at the site" (2007, 35). But visual narratives on cylinder seals probably start with linear compositions juxtaposing figures in endless rows with no clear beginning or ending. Schmandt-Besserat's observation is important for indicating that the linear sequence (and the ordering in subsequent registers) is not the only mode of visual narration.

representation of a sequence of events.[71] Visual narration has been repeatedly discussed, most importantly by Winter (1985, 1986) and also Selz (2014) as well as Selz and Niedermayer (2015):

> Narrative depiction may originate in proto-historic periods; it certainly became a salient feature in the visual arts when representation developed the means to render time. These means originated with the invention of cylinder seals, which widely superseded earlier stamp seal practices and became one of the most important categories of Mesopotamian artifacts. The rolling of a cylinder seal on clay is in itself a time-bound process: it encapsulates time.[72]

Concerning the evolution of cylinder seals, Porada states that

> the reasons for this development are problematic since stamp seals are more easily impressed on lumps of clay used to close the mouths of jars or other containers than are cylinder seals. Cylinder seals effectively cover a somewhat larger surface, however, such as a clay tablet.[73]

In fact, several sealed number tablets show that they were sealed first and the signs were scratched over the sealings later. The function of these tablets, however, is not entirely clear. Did they acknowledge the receipt of a quantity of goods by an economic office? Were they kept for internal use in these offices or sent back to the sender of the goods? Or were they rather issued by the distributing institution? And, finally, how do they relate to door and container sealings?[74]

Narrative depictions may have originated in proto-historic periods; they certainly became a salient feature in the visual arts when representation developed the means to render time. These means arrived with the invention of the cylinder seal, which widely superseded earlier stamp seal practices and became one of the most important categories of Mesopotamian artifacts.

In an early attempt to relate cylinder sealings to the evolution of the writing system Speiser wrote in 1941: "We know today that the Sumerians got their idea of

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71 A brief look at Egypt is informative here: in revisiting and discussing Heinrich Schäfer's *Principles of Egyptian Art* (1919) and his theory on representation in Egyptian art, Baines writes (2007, 218), "Development of composition is in the form of sequences that can be read along registers or set of register".

72 Selz 2019, 371.

73 Porada 1993, 563.

74 Unfortunately, the transactions documented by the Uruk III and Uruk IV administrative documents remain largely unknown. Earlier attempts by Vaiman 1974 to connect the subscripts of some of these texts with the much younger transaction formulae remain speculative.

writing from the cylinder seals which they engraved with various designs to serve as personal symbols"; and he further remarked "the immediate ancestor of Mesopotamian writing was the cylinder seal, which was first and foremost the Sumerian's mark of ownership."[75] But this was rejected by Gelb in 1963, 65: "I strongly disagree with the opinion that the Sumerians came upon the idea of writing through their use of the cylinder seal or that the immediate ancestor of writing was the cylinder seal."

This important issue was addressed again in the work of Schmandt-Besserat.[76] As I agree with her notion that "the evolution from evocation to narrative in seal and pottery decoration denotes different cognitive skills" (2007, 49) the "linear compositions" should be judged quite differently because the introduction ('invention') of cylinder sealings predates the earliest proto-cuneiform tablets of the Uruk IV type by several generations.[77] It is therefore extremely unlikely that "it was by borrowing the linear layout and hallmark strategies of writing to communicate information that art began to tell simple stories" [...] "leaving little doubt that it was art that emulated writing, not the contrary".[78]

The use of cylinder sealing did make pictorial sequencing of events – that is their narration – possible; but this was centuries before these features are attested in written texts.[79] And equally telling, even the sequence of signs in the individual entries of the earliest documents often do not yet adapt to the sequence of reading.[80]

The transcription of the signs of the three lines below (**Fig. 6a**), which follow the usual later reading from right top to left bottom, is: AN:NIN:SU:ĜIR$_2$ / AN:NINA:UR / GAL:LÚ.

The (linguistically) correct reading is, however, ^{d}nin-ĝir$_2$-su / ur-^{d}nanše / lugal "(For the god Nin-Girsu, Ur-Nanše, the king," and the 'correct' sequence of the signs therefore *AN:NIN: ĜIR$_2$:SU / UR:AN:NINA / LÚ:GAL. It may well be that the semantic connotations as well as 'aesthetic' arrangement of the 'logograms' determined their position in these three lines.

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75   Speiser 1941, 7–8.

76   Schmandt-Besserat 1997.

77   Schmandt-Besserat is, of course, fully aware of the chronological issue: however the research question "studying writing's impact on seals" may already preclude her discussions: cf. 2007, 28. Boehmer has argued that cylinder sealings are attested in Uruk by the period of Uruk V or even earlier (Boehmer 1999, 3–9; 113). They seem to predate proto-cuneiform by ca. 500 years, even if cylinder sealing was invented in Susa (Boehmer 1999, 114; 122–125).

78   Schmandt-Besserat 2007, 103.

79   See the quote from Civil 2013 in fn. 37.

80   The organization during the earliest periods of the signs of an entry within a line or box remains puzzling: the issue has been addressed by Cancik-Kirschbaum – Mahr 2005 and Cancik-Kirschbaum 2012. Occasionally semantic principles seem involved – as in fig. 6a. Wagensonner 2020 provides numerous examples for the variation of sign sequences in the lexical tradition from the late Uruk into subsequent periods.
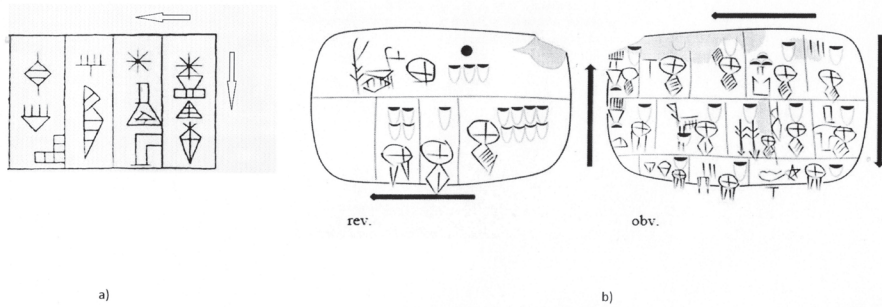
Fig. 6: Reading sequence of early texts: a) Excerpt from an Ur-Nanše inscription (Urn. 35); b) Reading sequence of a Uruk IV cattle account (First lines of Urn. 35, after De Sarzec 1884, XXXVI; VAT 05294, https://cdli.ucla.edu/dl/lineart/P005410_l.jpg).

Therefore, I suggest that the rolling out of cylinder seals – perhaps indeed in order to cover a larger surface more conveniently – finally led to their use in narrative design – at least in a linear sequential mode of representation. As noted before, rolling out a cylinder seal is a time-bound process;[81] cylinder sealings are therefore an ideal medium for representing a sequence of events. The use of multi-register seals and other multi-register forms of visual representation in early art is likewise an independent development with little connection to the written (linguistic) documentation. Even the 'reading' of visual narratives – always from the bottom to the top[82] – has no correspondence to the general structure of written documents (see **Fig. 6b**).[83] The only correspondence between both is the general organizational principles in 'registers', which seems to emulate art (cylinder sealings), not the other way around.

At this point we can say that art and writing evolved independently as two discrete semiotic systems. The fact that both produce rather distinct "incongruent" corpora is therefore not surprising.[84] Overlappings are, however, attested, specifically with cylinder sealings and, to a lesser extent, with the iconic origin of cuneiform signs.

81 Henri Frankfort was the first – and as far as I see the only – scholar who described the process of cylinder sealing in similar terms (Frankfort 1939, 2–3). See also Topçuoğlu 2010.

82 At least in the art of the 3rd millennium, I could not find an exception to this rule. Even the Stele of the Vultures (contrary to Cooper's suggestion in 2008) follows the same principle (with Winter 1985, 1986).

83 Veldhuis, who advocates a definition of writing along the lines of Gelb, wrote in 2012, 6 that "the introduction of an obligatory sign order around the middle of the third millennium created a straightforward relationship between visual text and its aural representation."

84 Cooper 2008. The situation is decidedly different from the late Western tradition, in which art is intended to illustrate a given text (as in the *biblia pauperum*).

Fig. 7: Archaic Cylinder seal from Uruk (Erlenmeyer seal, https://cdli.ucla.edu/dl/photo/P274834_d.jpg; courtesy Englund).

Therefore, I contend that another major step in the evolution of the earliest writing system was the invention of the cylinder sealings, not later than the first part of the fourth millennium.

Interconnections between art and writing

The possible overlap between the visual representations and early writing is demonstrated by the seal below from early Uruk (CDLI S001379; Uruk III?; see **Fig. 7**). It can be understood as 'true' writing in the narrow sense and be read (following Englund):[85]

1., EZEN$_b$ MUŠ3$_a$ U$_4$ SIG AN / 2., AN AN AN
"Festival: Morning (and) Evening Inana: stars".[86]

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85 Steinkeller's suggestion that this seal proves "the Uruk artists knew cuneiform, and that they occasionally incorporated it into their images" (Steinkeller 2017, 27) is, of course, perfectly feasible. But one could also argue that this seal is an example of the iconic foundations of the proto-cuneiform.

86 Cf. Steinkeller 2017, 27 with fn. 31. This 'transcription', however, ignores the central and prominent motif of the seal, the bull. I considered previously any link to the narrative 'Inana and the Bull of Heaven' as purely speculative (cf. Selz 2020a, 418). My untiring reader and editor, an expert in archaeo-astronomy, Craig Crossen, however remarks (email from 2/20/2020): "the design is astronomical. That means the bull in the design must be Inana's 'Bull of Heaven'."

Fig. 8: The 'reading' sequence of the Uruk Vase (Photo by Osama Shukir Muhammed Amin, https://en.wikipedia.org/wiki/Warka_Vase#/media/File:Warka_vase_(360).jpg).

Although the depictions of this seal can be read as a 'written text', it does not require a literate seal-cutter. It was certainly understandable within the contemporary system of visual arts, much in the same ways as the depictions on the famous Uruk Vase form a visual text which can be read without specific language skills.[87] Schmandt-Besserat and Selz as others have argued for a reading the Vase's design as "narrative," the former providing a list of "parallels between the Uruk Vase composition and the impressed tablets". The parallels are closest concerning the register-like disposition of scenes and signs and their boustrophedon arrangement. The reading of the Vase is clearly from the bottom to the top register (**Fig. 8**).[88] When we look at the proto-cuneiform tablets Schmandt-Besserat's "12 characteristic features" largely disappear (see **Fig. 6**); direction of reading indicated by arrows. What is common is simply the arrangement of the depictions and script in registers.

In fact, the visual organization in registers and the reading from bottom to top obtains in virtually all known visual representations of the 3rd millennium BCE. Therefore, we contend that writing emulates (or originally adopted) modes of visual representation, drawing, among others, on the ekphrastic reading of pictorial programs.[89]

The conclusions of the analysis presented here: Any writing is basically a visual means of communication. Visual communication fixed by a specific medium acquires a permanence linked to its material qualities and is spatial. Gestures, by contrast, lack this property; and sounds and speech are intrinsically transient.[90] Vision and hearing possess distinct features, although overlaps do exist. In addition, the 'number sense' seems to have evolved at the intersection of these two domains. Indeed, the development of proto-cuneiform writing was stimulated as a response to problems of iconic, phonetic, and numerical representation, all of which stand at the cradle of the earliest attested writing system and contributed to its formation.

During its evolution, Mesopotamian writing drew on three major systems of abstract symbolism:

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87   See also Hockmann 2008, who describes overlappings between some elements of the storage scene in the upper register of the Vase and early cuneiform script (the present writer is, however, not fully convinced by Hockmann's conclusions).

88   See Selz 2019.

89   This contradicts Schmandt-Besserat's opinion (2007, 46): "Apparently the designer of the vase emulated the accounting records by organizing images in lines and giving meaning to their size, order location and direction in the composition."

90   Or in the words of Robertson 2004, 20: "If visual properties combined with aural attributes of human perception constitute the possibility of writing, then those selfsame visual properties also give writing certain advantages over speech. A simple explanation is that its visual nature makes writing preservative, against the transient nature of speech."

a) Counting [tokens] (tactile and spatial sequenced numerosity)
b) Depictions [with high or low iconicity] (spatial ordered images)
c) Speech/language (temporal ordered sounds)

Consequently, we should go above and beyond, or at least modify, a 'logocentric' bias when discussing early scripts. Only then can we assign script its proper place within the Mesopotamian culture of signs. Mesopotamian reasoning, we contend, was not restricted to linguistically expressed propositions.

Summing up

I hope to have demonstrated that the still-prevailing logocentric concept of writing is too narrow for fully grasping the communicative potential of the cuneiform script. A more general semiotic approach provides, in agreement with the emic perception of Mesopotamian scribes, additional insight into their epistemic world. It is hermeneutically promising to determine how early Mesopotamian iconography and semasiography, although they developed as distinct semiotic systems, remained intertwined. The available evidence suggests that the capability to produce and render narratives originated with visual representations. The production of signs in art and in semasiographic writing, however, followed much the same principles. I suggest that the increasing prominence of glottographic features in the cuneiform script changed the ways of its reception significantly: phonetic allusion and language-based analogies partially superseded but never entirely replaced the iconically based imagery. During the entire history of cuneiform writing the iconically and linguistically represented imagery (and its grammar and syntax), the 'world behind the words', remained a cornerstone for knowledge transmission. But the material discussed here does not provide a final answer to the problem of how "images work to generate forms of knowledge distinct from language or text." Evidently, glottography mimicking speech transmits information with a higher degree of precision whereas images alone situate the knowledge within an epistemic universe. We conclude that mixed 'logo-syllabic writings' preserve and transmit more, and more profound knowledge than simple speech. It seems that this was at the core of all Mesopotamian hermeneutic endeavor. [91]

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91 This is what Crisostomo 2019 termed "analogous reasoning" or "analogous hermeneutics" which refers to much the same as my "additive thinking" (Selz 2002; 2004, 39; cf. Selz 2013, 50; 64–65 and Selz in press a). – The notion of Du Ponceau (fn. 18) from 1838 can be well contrasted with Jevons (1887, 628), quoted by Crisostomo 2019, 39: "The whole structure of language and the whole utility of signs, marks, symbols, pictures, and representations of various kinds rest upon analogy."

I also suspect that the differences between both systems are linked to their distinct aesthetic properties, one consisting of space-oriented visual signs (sight) and the other of time-connected perception of sounds (hearing). A link between both domains might be that images as words can constitute narratives, which might be considered textual prototypes. I suggest that the organization of the visual and linguistic domains as well as their interconnections, and their epistemic power, may best be described as rhizoid. Thus, I would like to conclude with Rudolf Arnheim's statements: "The scientist, like the artist, interprets the world around him and within him by making images." "Thinking calls for image and images contain thought."[92]

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