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Number 13.1

Title: Early Linguists

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Posted to web: 15 November 2019

Early Linguists

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Abstract

This article was written to draw attention to the earliest serious linguistic documents in existence: a set of sophisticated bilingual Sumerian-Akkadian paradigms dating to the early 2nd millennium BC, when Sumerian was dead or dying as a spoken language. The fascinating material is relevant for the early history not only of linguistics, but of history of science in general.

1. Introduction.

The tablet collection of the Oriental Institute of the University of Chicago contains a remarkable set of five closely knit Old Babylonian bilingual Sumerian-Akkadian verbal paradigms, totalling almost 900 lines, dating to the early second millennium BC, when Akkadian was the common spoken language and when Sumerian was dead or dying as a spoken language. These sophisticated texts are by far the earliest serious grammatical documents in existence. Their relevance to the history of science – more precisely: the history of linguistics – is comparable to, or even surpassing, that of the mathematical texts of the same period to the history of mathematics. Regrettably, these texts are hardly known outside of Sumerological circles and deserve wider publicity. This article was written with the hope to remedy the situation.

Modern science – more precisely: the modern presentation of science – follows the discursive style inspired by Greek role models such as Aristotle, Euclid and Ptolemy. Pre-Greek learning does not know this style, it relies on lists, examples and recipes. In early philosophy (“wisdom literature”) the principal vehicles of communication were proverbs and parables, in mathematics exemplary solutions of selected problems, and in astronomy the so-called procedure texts. In the Sumerian and Old Babylonian philology of the late third and early second millennium BC we have a pile of descriptive materials, such as lexical lists and collections of stock phrases. But in addition, most remarkably, we have the above-mentioned, strictly organized bilingual verbal paradigms. The latter deserve to be classified as linguistic science. In an Appendix I shall try to place the work of the Old Babylonian linguists into the context of early philosophy, mathematics and astronomy.

While collections of stock phrases merely demonstrate knowledge of the languages, these paradigms go beyond: they demonstrate active linguistic interest in the grammatical structure of the two languages. The paradigms come about as close to comparative linguistics as is possible within a non-discursive approach. In distinction to traditional comparative linguistics, which operates within a family of related languages, we have here a structural comparison of unrelated languages: Akkadian is an inflecting Semitic language, while Sumerian is an agglutinating language with no known ancient or modern relatives; for a conceivable relation to Uralic languages see Parpola (2016)^[25].

To avoid potential misunderstandings I should emphasize that the focus of this paper is not on the Sumerian language flourishing in the third millennium BC, but on its streamlined grammatical understanding developed by ancient scholars at a time when it was dying as a spoken language. Back then, an Akkadian speaking student, learning Sumerian grammar assisted by bilingual paradigms, would have enjoyed the benefit of oral comments from his teacher. The modern reader is at a clear disadvantage.

The systematic thinking of the Old Babylonian linguists and the sophisticated construction underlying the paradigms are worthy of our admiration. The closer one looks, the more astonishing it is into what details a sophisticated non-discursive approach can advance, despite the intrinsic limitations caused by the structural differences between Sumerian and Akkadian.

By discussing a few selected, easily accessible grammatical features, I shall try to give an impression both of the depths and of the limitations of a carefully designed paradigmatic approach. I hope to have been able to present the difficult, somewhat recalcitrant material in a form digestible by a modern reader even if he is not familiar with Sumerian and Akkadian. To assist him, I have complemented the quoted passages of the paradigms with an English translation of the Sumerian forms (the Sumerian and Akkadian forms as a rule are carefully matched, but the former sometimes offer more details by resolving Akkadian ambiguities) and with an indication of the grammatical structure of the Akkadian forms. It is not the place here to elaborate on Akkadian grammar. Two recent works, both now in the third edition, are von Soden's standard reference GAG (1995)^[10] and Huehnergard (2011)^[18]. Both provide extensive verbal paradigms. For "true" Sumerian, see the grammars by Thomsen (1984)^[27], Edzard (2003)^[7] and Jagersma (2010)^[19]; these are primarily based on written documents from the later part of the 3rd millennium BC.

2. The texts.

The relevant paradigms are published in MSL IV (1956)^[20] as OBGT VI-X. These five texts are of unknown provenience; they are preserved in the tablet collection of the Oriental Institute of the University of Chicago and form a closely knit group. They throw a sharp spotlight on a narrowly focused aspect of Sumerian grammar: verbal morpho-syntax. Their concern is not entirely accidental: the analysis of verbal structure is regarded as the most difficult and controversial part also of modern Sumerian grammatical study. Closely related material can be found in the Ur Excavation Texts UET 7, which in particular offer another recension of OBGT VII, and in a unilingual OB paradigm (N3513+N3592) from Nippur, see Black (1991: 137-143, 155-158)^[1]. All these texts have been treated extensively by Black and more recently by Huber (2007)^[13], (2008)^[14], (2018)^[15].

I have made a considerable effort to extract the grammatical structure, *as it was understood by the Babylonians*, from these texts alone. Thereby, I have hoped to steer clear of unwarranted modern preconceptions, of whose dangerously misleading influence I had become aware during my work with Babylonian mathematics, where we originally had overrated the role of algebraic thinking. Originally, Otto Neugebauer in his *Mathematische Keilschrift-Texte* (1935)^[23] quite appropriately had described the sophisticated mathematics behind those texts in modern algebraic terminology, and this had led to a general belief that the Babylonians had thought algebraically throughout. As a young student I had been one of the first to recognize an instance of a text with a clear underlying geometric argumentation (Huber 1955)^[12]. Now, much later, I was tempted to try a similar inside approach to the case of the equally sophisticated linguistic texts.

This self-contained approach necessitated paying close attention to the design underlying the paradigms, and it revealed an astonishing amount of systematic, sophisticated grammatical information the Old Babylonian scholars had packed into them. My last-mentioned essay (2018)^[15] contains the full text of the above paradigms, together with detailed analyses and English translations. Claims made in the following without further attribution refer to that essay.

My approach is based almost exclusively on the Oriental Institute texts OBGT VI-X, but of course includes the incompletely preserved recension of OBGT VII from Ur, which covers about two thirds of that paradigm. I go beyond this corpus only in Section 7, where I draw from the closely related

unilingual Old Babylonian Nippur text N3513+N3592, supplemented by a few snippets from OBGT III.

On the tablets, the paradigms are arranged in parallel columns, with Sumerian forms on the left and Akkadian ones on the right. The paradigms are subdivided into paragraphs, that is, into groups of a few consecutive lines of text, separated by a horizontal dividing line. The internal structure of these paragraphs is based on Akkadian conjugation. Most paragraphs have 3 lines, in the order: 3rd, 1st, 2nd person subject. With non-indicative forms, the order is reversed: imperative(2nd), volitive(1st), precativ(3rd).

Three of the paradigms (OBGT VI, VII and X) exhibit strictly organized grid structures, the other two are somewhat less disciplined. It would be a gross oversimplification to consider either the Sumerian or the Akkadian column of these paradigms as a translation of the other. The relationship is more complicated, and it is necessary to treat the two columns as a composite whole. It is clear from OBGT VI (see Section 6) that the grids of the paradigms are constructed on the basis of the Akkadian two-case dative-accusative system, not on the much richer Sumerian system. Thus, both the Sumerian and the Akkadian forms appear to be filled into an Akkadian-based template. This would seem to imply that the translation is from Akkadian to Sumerian. However, the grids are supplemented by occasional inserts, highlighting features that did not fit into the straitjacket of an Akkadian-based grid. While, once one has figured out the underlying design, the regular parts of the grids as a rule are straightforward to analyze and understand, the inserts are much trickier, and Sumerologists sometimes have been tempted to discard them as “errors of a careless scribe”.

I have called these inserts “didactic”, since the paradigms apparently originate out of the Sumero-Babylonian school system. This is confirmed by an Old Babylonian letter to the *ummiānum* (“scholar”, “teacher”) whose author writes that he will go to the school and read and correct a tablet, which by its first word is identified as the paradigm we shall discuss in the next section; see Huber (2018: 9)^[15]. I believe that such inserts had been inserted by a teacher to assist him with his discussion of Sumerian and Akkadian grammatical subtleties. Unfortunately, we do not know the role played by these paradigms in the ancient school system.

It is remarkable that the paradigms seem to put special emphasis on precisely those aspects that still are controversial in modern Sumerian grammars. This concerns in particular the so-called conjugation prefixes (see Section 6). Apparently, they were regarded as difficult 4000 years ago. Were these questions controversial already then?

3. An intransitive verb.

We begin the discussion with the largest text OBGT VII, which on 318 lines treats an intransitive verb: Sumerian *gen/du*, Akkadian *alākum* = “to go”. Table 1 should give an impression of the layout of such a paradigm. It is quoted here from the Ur recension, the first paragraphs of the Oriental Institute version are broken off. The text on the tablet is highlighted.

The verbal root of Akkadian verbs usually consists of three consonants. However, *alākum* is a so-called weak verb, whose first consonant ^ʾ of the three-consonant root ^ʾ*lk* has become invisible. The consonants carry the basic meaning of the verb, to be modified by vowels and inserts, prefixes and suffixes.

Already this small excerpt of 30 lines illustrates several relevant points. Both languages possess a so-called ventive construction, in Akkadian involving the elements /am/ (sg.) and /nim/ (pl.), and in Sumerian the marker /m/, all expressing a direction towards “me”, “here”. Thus, in Table 1 the ventive *gen-am*₃ = *al-kam* = “come!” of §1 (literally: “go here!”) corresponds to the non-ventive *geni* = *a-lik* = “go!” of §7.

In §2 and §8 a 3rd person indirect object is added to the ventive and non-ventive constructions of §1 and §7. The Akkadian side suffixes the dative pronoun *šum*, in §2 assimilating the *m* of the ventive to *š*. The Sumerian side adds the compound element /n/-/ši/, consisting of the 3rd person pronoun /n/ and the terminative case marker /ši/; the latter sometimes is written /še/. Thus the morphology of line 4 is /gen/-/m/-/n/-/ši/, where /gen/ is the verbal base “to go”, /m/ the ventive marker, /n/ the 3rd person pronoun, and /ši/ the terminative case marker. In §2 /n/ is elided, but note that in §8 it is spelled out. See the discussion of spelling problems in Section 4.

OBGT VII. Non-indicative forms: imperative, volitive, precative				Akk. structure	
§1	1	gen-am ₃	<i>al-kam</i>	come!	– G V Ni
	2	ga-am ₃ -gen	<i>lu-ul-li-kam</i>	may I come!	
	3	ḫe ₂ -em-du	<i>li-il-li-kam</i>	may he come!	
§2	4	gen-am ₃ -še	<i>al-ka-aš-šum</i>	come to him!	3D G V Ni
	5	ga-am ₃ -ši-gen	<i>lu-ul-li-ka-aš-šum</i>	may I come to him!	
	6	ḫe ₂ -em-ši-du	<i>li-li-ka-aš-šum</i>	may he come to him!	
§3	7	gen-am ₃ -mu-še	<i>al-kam a-na še-ri-ya</i>	come to me!	1D G V Ni
	8	ga-mu-e-ši-gen	<i>lu-ul-li-ka-ak-kum</i>	may I come to you!	2D
	9	ḫe ₂ -mu-e-ši-du	<i>li-li-ka-kum</i>	may he come to you!	2D
§4	10	gen-am ₃ -ma	<i>at-la-kam</i>	come away!	– Gt V Ni
	11	ga-am ₃ -ma-gen	<i>lu-ut-ta-al-kam</i>	may I come away!	
	12	ḫe ₂ -em-ma-du	<i>li-it-ta-al-kam</i>	may he come away!	
§5	13	gen-am ₃ -ma-še	<i>at-la-ka-aš-šum</i>	come away to him!	3D Gt V Ni
	14	ga-am ₃ -ma-ši-gen	<i>lu-ut-ta-al-ka-aš-šum</i>	may I come away to him!	
	15	ḫe ₂ -em-ma-ši-du	<i>li-it-ta-al-ka-aš-šum</i>	may he come away to him!	
§6	16	gen-am ₃ -ma-mu-še	<i>at-la-kam a-na še-ri-ya</i>	come away to me!	1D Gt V Ni
	17	ga-am ₃ -mu-e-ši-gen	<i>lu-ut-ta-al-ka-ak-kum</i>	may I come away to you!	2D
	18	ḫe ₂ -em-mu-e-ši-du	<i>li-it-ta-al-ka-ak-kum</i>	may he come away to you!	2D
§7	19	gen-ni	<i>a-lik</i>	go!	– G – Ni
	20	ga-gen	<i>lu-ul-lik</i>	may I go!	
	21	ḫe ₂ «-en»-du	<i>li-il-lik</i>	may he go!	
§8	22	gen-en-ši	<i>a-lik-šum</i>	go to him!	3D G – Ni
	23	ga-en-ši-gen	<i>lu-ul-lik-šum</i>	may I go to him!	
	24	ḫe ₂ -en-ši-du	<i>li-lik-šum</i>	may he go to him!	
§9	25	gen-ba	<i>at-la-ak</i>	go away!	– Gt – Ni
	26	ga-ba-gen	<i>lu-ut-ta-la-ak</i>	may I go away!	
	27	ḫa-ba-du	<i>li-it-ta-la-ak</i>	may he go away!	
§10	28	gen-ba-ši	<i>at-la-ak-šum</i>	go away to him!	3D Gt – Ni
	29	ga-ba-ši-gen	<i>lu-ut-ta-la-ak-šum</i>	may I go away to him!	
	30	ḫa-ba-ši-du	<i>li-it-ta-la-ak-šum</i>	may he go away to him!	

Table 1. The first ten paragraphs of OBGT VII (taken from the Ur recension, UET 7, 100). They cover Non-indicative forms (Ni): imperative, volitive, precative. An analysis of the Akkadian structure is given on the right: Person and case of the object, Akkadian stem (G or Gt), ventive or non-ventive. Line 21 contains a scribal error, the expected ḫe₂-du is given in the parallel texts. I use hyphens to connect transliterated cuneiform signs when they form part of a word.

Paragraphs §1-3 and §7-8 use the Akkadian “Grundstamm” G, while other paragraphs employ the derived Gt-stem, which inserts a -t- (or -ta-) infix after the first of the three radical consonants; it generally expresses a change of direction. The paragraphs §9 and §10 show that in non-ventive constructions it is matched by the Sumerian prefix /ba/; we shall denote it as “separative” and mechanically render it by “away” in our translations. A comparison of ventive and non-ventive forms shows that the ventive /m/ and the separative /ba/ in §4 to §6 combine to /m/-/ba/ > /mma/.

Furthermore, a comparison of the first six imperatives (lines 1, 4, 7, 10, 13 and 16) shows that the Sumerian form in line 16 should be analyzed as /gen/-/m/-/ba/-mu/-/ši/, where /gen/ is the verbal base “to go”, /m/ the ventive, /ba/ the separative, /mu/ the 1st person pronoun and /ši/ the terminative case “to”. Interestingly, by using a double m in line 7, and through separating the ventive and the 1st person pronoun by the separative /ba/ in line 16, the Old Babylonian grammarians in this paradigm clearly treat various usages of m-morphemes very systematically and syntactically different from modern Sumerian grammars. The latter do not separate the ventive-m from the m of the 1st person pronouns /mu/ (sg.) and /me/ (pl.), nor from that of the conjugation prefix /mu/ (for non-ventive use of the latter in the paradigms see Section 8).

For example, the Akkadian language does not distinguish between the 1st person singular dative and the ventive, while the Sumerian language apparently does. In OBG VII the OB grammarian distinguishes the Akkadian datives of lines 7 and 16 from the mere ventive forms in lines 1 and 10 by emphasizing the 1st person goal by adding “*ana šēriya*”, literally “to my back”. But this device is used only with imperatives. With analogous indicative (i.e. present or preterite tense) constructions the line with the 1st person terminative is omitted and only the ventive version is shown.

In OBG VI a closely related problem surfaces even more pointedly. There, a pair of paragraphs contain Sumerian and Akkadian non-ventive and ventive 1st and 2nd person singular dative constructions. The first two lines of the *non-ventive* VI§13 offer: *gar-ma-ra = šuknam* = “place (it) for me!”, *ga-ra-ab-gar = (luškukum)* = “may I place it for you!”. The parallel *ventive* paragraph VI§15 omits the line with the 1st person (where the Akkadian column would have to contain an impossible dative + ventive combination) and offers only the ventive version of the second line: *ga-mu-ra-ab-gar = luškunakkum* = “may I place it for you here!”.

In principle such differences between ancient and modern grammars may be due to errors (on either side), or more likely to differences between the underlying language material – the modern grammars are based on a diachronic and synchronic hodgepodge of unilingual written documents, the ancient paradigms perhaps on a scholarly oral tradition. But possible concerns about artificiality and normative over-systematization of the grammar under scrutiny do not really matter for us, who are not concerned with the language spoken by native Sumerians, but with the theoretical edifice built by the ancient grammarians.

Grid structure and inserts.

As a rule grammatical subtleties become visible in a paradigm only when the grid is complete, or at least reasonably so. With a total of 292 lines the regular part of OBG VII systematically covers all combinations: singular and plural subjects (all three persons), no object and dative objects (all three persons, singular and plural), ventive and non-ventive, separative and non-separative constructions, and among the aspects non-indicative (imperative, volitive, precative), present and preterite tense. It is complete subject to the following three restrictions: it omits semantically impossible self-references, it requires the ventive when the motion is toward a 1st or 2nd person, and it avoids 1st person singular objects, except with imperatives.

These restrictions, and the presence of some inserts (see below), at first made it rather difficult to recognize the strict ordering underlying this paradigm. The Oriental Institute and the Ur recensions at the beginning follow the same ordering principles, but then diverge somewhat. Apart from a few minor damages the Oriental Institute version is complete, while the preserved part of the Ur version ends at §69, with a catch line to a subsequent tablet.

The more systematic Ur ordering rules, which are strictly applied up to the end of the singular object section in §66, can be described as follows: The person of the subject is varied inside each single paragraph. The person of the object is covered by triples of adjacent paragraphs, the first of which has no object, the second 3rd person objects, and the third 1st + 2nd person objects. A pair of such triples then covers G and Gt stems, respectively, the next group is concerned with ventive and non-ventive, and so on, with ever larger groupings. The Akkadian structural indications in Table 1 show the effects of the beginning of this scheme. The largest groups are formed by the objects: singular objects are dealt with in §1-66, plural objects in §67-104.

In other words, the grammatical topics are arranged according to a system that varies

fastest:	- person of subject
then:	- person of object (no object, 3 rd person, 1 st + 2 nd person) - Akkadian G, Gt stem (“go” vs. “go away”) - ventive, non-ventive (“come” vs. “go”) - tense or aspect (non-indicative, present, preterite) - number of subject (singular, plural)
slowest:	- number of object (singular, plural)

A straightforward computer program was used to translate the Akkadian-based abstract grid structure into synthetic Sumerian morphology. The latter agreed well with all 292 regular lines of the cuneiform text. Obvious discrepancies were of the kind encountered as spelling differences between the Oriental Institute and the Ur recensions and morphology, see the following section.

A curious divergence arises with consonant clusters that in cuneiform cannot be written as such. When a word-initial ventive marker /m/ is followed by a consonant, the cluster is resolved by writing am₃- in the present, but im- or i-im- in the preterite. Examples are VII§18: am₃-ma-du-un = *at-tal₂-la-kam* = “I come away” and VII§28: im-ma-gen-en = *at-tal₂-kam* = “I came away”. In both instances the ventive /m/ is followed by the separative /ba/. Is this divergence of morphological or of merely phonetic origin? The paradigms cannot answer it.

Another curiosity is that the Akkadian dative is mirrored by a Sumerian terminative /ši/ in the singular, but by a mostly elided locative /a/ in the plural (/a/ is spelled out only in imperative forms). This applies both in the Oriental Institute and in the Ur recension, but /ši/ is used throughout in the unilingual Nippur paradigm N3513+N3592. Thus we have VII§72: mu-e-ne-gen-en = *al-li-kam ku-nu-ši* = “I came to you(pl.)”, but i11: mu-e-ne-ši-gen-en.

In the Akkadian columns of the paradigms the tenses – present and preterite – are straightforward. The encoding of their Sumerian counterparts is more complicated. For the moment it suffices to mention that in the intransitive OBG VII the tenses are distinguished by the verbal bases: du (sg.) and su₈ (pl.) for the present, gen (sg.) and re₇ (pl.) for the preterite. The transitive OBG VI uses only a single verbal base /gar/, but distinguishes tenses by the position of the subject marker (before or after the base), while OBG VIII and IX utilize both devices. For more on these issues see Sections 7 and 8.

In addition to this regular part of OBG VII the Oriental Institute recension (but not the Ur recension) has 26 lines of inserts. One insert covers stative constructions, highlighting a difference between

Sumerian and Akkadian. Before and after the regular present tense entry VII§12 *i*₃-du = *illak* = “he goes” the insert adds Sumerian stative constructions indicated by the prefixes /al/ or /an/: VII§11 al-du, VII§14 an-du, but renders both by the Akkadian present tense *illak*. This is to be contrasted with the Akkadian stative used with a transitive verb in VI§29: an-gar = *šakin* = “he/it is placed”.

I conjecture that this insert is concerned not only with Sumerian, but also with a subtle aspect of Akkadian grammar, namely whether the verb *alākum* admits a stative. What is at issue here is whether *alīk* in passages such as *alīk ḥarrāna* “he knows the route” (Gilgameš Y, vi 24) should be taken with GAG^[10] §77f as a stative (“he has been going”) or rather as the construct state of the verbal noun *alīkum* (“one who has been going”). The latter interpretation almost certainly is the correct one. Apparently the Akkadian stative is avoided with non-resultative verbs. Mostly, it is used to render transitive verbs intransitive (*šakin* = he/it is placed). Not all Assyriologists seem to be aware that in rare cases a stative is used transitively (*a-kil-a-ti* = you(fem.) are devouring, AHW^[11] p. 26). Interestingly, the OB grammarians have added an insert (VI§35) illustrating that transitive use is possible in both languages.

Another insert illustrates that Sumerian does *not* use the ventive when the motion is *away from* a 1st or 2nd person (VII§71: ba-me-du = *ittallak niāti* = “he goes away from us”, with the Akkadian accusative, to be contrasted with the preceding regular ventive entry: VII§70: am₃-ma-me-du = *ittallakam niāši* = “he comes away to us”, with the Akkadian dative). It follows that here the views of the Old Babylonian grammarians pointedly disagree with those of their modern colleagues. The latter identify the m of the 1st person pronouns (sg. /mu/ and pl. /me/) with the ventive and therefore claim that 1st person automatically requires ventive, see Edzard (2003: 93)^[7]. Note that Black (1991: 17)^[3] failed to understand the purpose of this insert by stating: “In view of the otherwise exemplary regularity of this text, it seems highly likely that these forms are to be regarded as the errors of a careless scribe.

4. Phonology and dialectal(?) variability.

The material accessible through the paradigms does not allow us to dig into the Sumerian phonology assumed by the Old Babylonians. The cuneiform writing system is deficient and in particular cannot express consonant clusters. In the transliterations of cuneiform texts the subscripts serve to separate homophonous signs, but have no phonetic significance. Though, there are a few sparse glimpses. The paradigms give the impression that the cuneiform sign /am₃/ sometimes is used to express a syllabic m (like the m in English “bottom”). The stative prefix alternatively is written /a/ or /an/; this may suggest nasalization, and therefore I normalize it as /ã/. Furthermore, the paradigms show that a morphological /bi₂/ after labial + vowel is dissimilated to /ni/, see Huber (2018: 44)^[15]. Incidentally, this dissimilation, once claimed by Falkenstein (1949: 205-207)^[9], later was negated by other Sumerologists.

There sometimes are substantial differences of spelling between the recensions. For example, the two recensions of VII§35 mirror the Akkadian *alkaniššum* = “come(pl.) to him!” with:

ga₂-a-mu-un-še-en-ze₂-en (Oriental Institute recension, line 99),

gen-am₃-ši-ze₂-en (Ur recension, UET 7,101, ii 42).

The grid and the Akkadian translation make it clear that the underlying common Sumerian morphology must be: /gen/-/m/-/n/-/ši/-/enzen/. Here, /gen/ is the verbal base “to go”, /m/ the ventive prefix, /n/ the 3rd person pronoun, /ši/ the terminative case marker, and /enzen/ the 2nd person plural pronoun. We cannot know for sure whether the differences are dialectal or merely in spelling, or

between theoretical (logographical/morphological) and phonetic writings. As a rule verbal bases are written logographically (so that phonetic variations mostly remain invisible), while for prefixes and suffixes syllabic writings are used. But for example, *ga₂-a-* could be the phonetic rendering of a morphological *gen-* when it precedes *m*. Elision of /n/ is very common. The conclusion is that we can rarely distinguish whether a seemingly absent morpheme really is absent, or invisible because it has been assimilated or elided, or omitted because of inadequacies of the cuneiform representation.

5. Comparing widely different languages.

A side effect of the non-discursive, paradigmatic nature of the presentation is that only such structural features can be dealt with effectively as have approximate correspondences in both languages. It is interesting to see how the OB grammarians cope with this problem, and the subterfuges they use.

For example, Akkadian distinguishes two genders, male–female, and assigns grammatical gender to inanimate things somewhat arbitrarily. Sumerian has a different two-way split between characteristic themes /n/ and /b/, variously, but inaccurately, analyzed by modern authors as animate–inanimate, or as human–non-human, or as person–non-person.

The paradigms approach this as follows. First, they simply omit female pronouns. Second, they use a surrogate split: definite–indefinite, choosing the 3rd person suffixed Akkadian pronoun (accusative *-šū*, dative *-šum*) for rendering /n/, and no pronoun for rendering /b/. In actual language use, this comes quite close to a person–non-person split: in an Akkadian sentence context a human personal pronoun almost inevitably is definite, since it refers to a person mentioned beforehand. Moreover, we note that in “true” Sumerian /b/ also can be used when referring to a group of human beings, especially when its members not are important as separate individuals. One should keep in mind that there is a fundamental difference between how Akkadian and Sumerian verbal pronouns are used in the sentence context. At least in principle, the Akkadian pronomial suffixes are true *pro-nouns*, used as substitutes for the nouns to which they refer, while the Sumerian pronomial prefixes pick up and recapitulate relationships expressed in the nominal part of the sentence.

In my English translations of these paradigms I approximate the split by rendering /n/ with “he”, “him”, and /b/ with “someone”, “it”.

Curiously, in the paradigms the Akkadian accusative pronouns never are used for referring to a direct object. Instead they are used in a comitative or in an ablative sense (“with him” or “away from us”), or to refer to a subordinate subject (“make him do it”).

Akkadian forms can include at most two indirect objects, and the second one only if it refers to a subordinate subject, as in the complex example

VI§61: *im-ma-di-ni-ib₂-gar* = *uš-ta-aš-ki-na-aš-šū* = someone(b) caused him₁(ni) to put(gar) it(∅)
away(ba) here(m) with him₂(di)

while in “true” Sumerian a verbal form can have at least three different indirect objects. Such forms cannot possibly be exemplified in the paradigms. From left to right, the Akkadian form encodes the subject (*u-*, 3rd or 1st person), causativity (*-š-*), separativity (*-ta-*), verbal stem (*-š-k-n-*), preterite (*-i-*), ventive (*-am-*) and accusative object (*-šū*, mirroring him₂).

Some features cannot be properly handled by bilingual paradigms. For example, we noticed in Section 3 that OBG VII uses different prosthetic vowels before word-initial consonant clusters: *a-* in the present, *i-* in the preterite. The paradigms cannot answer whether the reason behind such a differentiation is morphological or phonetic.

6. Transitive verbs.

OBGT VI treats the transitive Sumerian verb *gar* = Akkadian *šakānum* = “to place, to put”, while OBGT X is concerned with Sumerian *gub* = Akkadian *izuzzum*, *uzuzzum* = “to stand”. Curiously, also *gub* is treated like a transitive verb, apparently as “to set up”. The regular grids of the two paradigms agree, except that OBGT X only gives the first line of each paragraph. But VI offers more inserts. A comparison of the two paradigms was the crucial ingredient that helped to recognize the common grid and to separate the inserts from the grid.

Grid structure and Akkadian cases.

The initial part of OBGT VI is strictly organized, beginning with Ni-forms (§1-28), stative forms (§29-35) and then preterite tense forms without object or with 3rd person objects (§36-71). The remaining parts are less well organized and may have been added as afterthoughts. They comprise a stative paragraph (§72), four preterite paragraphs with 2nd person objects (§73-76), and seven lines with present tense forms. There are more inserts in OBGT VI than in OBGT VII, and they generally are trickier (that is: harder to interpret) than those of OBGT VII.

The forms without, or with 3rd person indirect objects, that is up to §71, show a strictly disciplined Akkadian-based organization. The paragraphs alternate between non-causative (G) and causative (Š) forms, and three such pairs, without objects (–), accusative objects (3A) and dative objects (3D) are grouped together.

The initial lines of a few selected six-tuplets are shown here as illustrations. Mostly I shall quote only the first line of the paragraphs. First, some non-indicative paragraphs:

VI§1	gar-ra ga-gar ḫe ₂ -gar	<i>šukun</i> <i>luškun</i> <i>liškun</i>	place (it, or yourself?)! let me place (it or myself?)! let him place (it or himself?)!	Ni	G		–
VI§2	gar-bi ₂ -ib ₂	<i>šuškin</i>	make someone(bi ₂) place it(b)!	Ni	Š		–
VI§3	gar-ra-an-da	<i>šukuššu</i>	place (it, or yourself?) with him(n-da)!	Ni	G		3A
VI§4	gar-ra-ni-ib ₂	<i>šuškiššu</i>	make him(ni) place it(b)!	Ni	Š		3A
VI§5	gar-ra-na-ab	<i>šukuššum</i>	place it(b) for him(na)!	Ni	G		3D
VI§6	gar-ra-na-ni-ib ₂	<i>šuškiššum</i>	make him(ni) place it(b) for him(na)!	Ni	Š		3D

Then some stative paragraphs:

VI§29	an-gar an-gar-re-en an-gar-re-en	<i>šakin</i> (<i>šaknaku</i>) (<i>šaknata</i>)	he(ø) is placed I(en) am placed you(en) are placed	St	G		–
VI§30	ba-ab-gar	<i>šuškun</i>	he(ø) was placed by someone(b)	St	Š		–
VI§31	an-da-gar	<i>šakiššu</i>	he(ø) is placed with(da) him(n)	St	G		3A
VI§32	ba-da-ab-gar	<i>šuškunšu</i>	he(ø) was placed with(da) him by someone(b)	St	Š		3A
VI§33	an-na-gar	<i>šakiššum</i>	he(ø) is placed for him(n)	St	G		3D
VI§34	an-na-ni-ib ₂ -gar an-na-ni-ib ₂ -gar-re-en an-na-ni-ib ₂ -gar-re-en	<i>šuškunšum</i> (<i>šuškunakšum</i>) (<i>šuškunassum</i>)	he was placed for him by someone I was placed for him by someone you were placed for him by someone	St	Š		3D

In distinction to the other groups the stative paragraphs (with the possible exception of §34) show intransitive constructions and correspondingly use Sumerian suffix conjugation (see Section 8 for the two types of conjugation). Parenthesized forms correspond to blanks in the Akkadian column; in most cases they can be filled in easily and unambiguously. The systematic construction of the underlying grid with the Akkadian causative Š-stem has the slightly awkward effect that the stative-passive is bound to have an implied agent “by someone(b)”, as in VI§30: *ba-ab-gar*. The more natural agent-less stative-passive form *ba-gar* in fact occurs in the curious insert VI§56, where it is paired with the Akkadian *ittaškan*. The latter is a clear Nt-form, combining the passive N-stem with

the separative t-insert: “he/it was put away”. What is remarkable about this insert is that the modern grammarians doubt the existence of the Nt-stem in standard Akkadian. I suspect that the ancient grammarians took recourse to this highly unusual form in order to mirror a Sumerian agent-less stative-passive.

In the anomalous VI§34 one would have expected the (intransitive) Sumerian form *ba-na-ab-gar* “he(ø) was placed for him(na) by someone(b)”, analogous to VI§32. The Sumerian forms presented in VI§34 have a participant too many for an intransitive construction (my above translations render the Akkadian). Therefore, I am under the impression that here a Sumerian transitive(!) construction is used instead, literally: “someone(b) made him(ni) place him/me/you(ø/en/en) for him(na)”. While the person being placed is the primary logical subject as in VI§29-33, it appears to be construed here as a suffixed direct object, spelled out like the subject in the intransitive paragraphs (3rd person –ø, 1st and 2nd –en).

After this group the paradigm includes an insert (VI§35) with Sumerian infix conjugation, illustrating that in both languages statives can have transitive use. See Section 8 for the use of infix conjugation in Sumerian preterite tense transitive constructions.

VI§35	ab-gar a-gar e-gar	<i>ša-ki-in</i> (<i>šaknaku</i>) (<i>šaknata</i>)	someone(b) was placing (it) I(ø) was placing (it) you(a-e>e) were placing (it)	St	G		3D
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Properly speaking, the Akkadian stative is a conjugated noun, and it disregards tense, while the Sumerian stative is a regularly conjugated verbal form.

Finally some indicative paragraphs:

VI§66	ma-an-gar ma-gar ma-gar	<i>iškunam</i> (<i>aškunam</i>) (<i>taškunam</i>)	he(n) put (it) here I(ø) put (it) here you(e, elided) put (it) here	Pt	G	V	–
VI§67	ma-ni-in-gar	<i>ušaškinam</i>	he(n) caused someone(bi ₂ >ni) to put (it) here	Pt	Š	V	–
VI§68	ma-da-an-gar	<i>iškunaššu</i>	he(n) put (it) with him(da) here	Pt	G	V	3A
VI§69	ma-di-ni-ib ₂ -gar	<i>ušaškinaššu</i>	someone(b) caused him(ni) to put it with him(di) here	Pt	Š	V	3A
VI§70	ma-ši-in-gar	<i>iškunaššum</i>	he(n) put (it) to him(ši) here	Pt	G	V	3D
VI§71	ma-ši-ni-in-gar	<i>ušaškinaššum</i>	he(n) caused him(ni) to put (it) to him(ši) here	Pt	Š	V	3D

Note that the Akkadian accusative sometimes is rendered by a Sumerian comitative (da, di), sometimes by a subordinative (ni), and the Akkadian dative sometimes by a Sumerian dative (na), sometimes by a terminative (ši). The Akkadian causative Š-stem is mirrored by a Sumerian subordinate subject, here either an impersonal /bi₂/ or a personal /ni/. If both an indirect object and a subordinate subject occur together, the former is put first and is referenced by the Akkadian suffixed pronoun, as in VI§6, §32, §34, §69 and §71. If there is no indirect object, the Akkadian –šū references the subordinate subject, as in VI§4. Note that in VI§68 to 71 the /n/ of the 3rd person indirect object is elided.

Conjugation prefixes.

The most remarkable feature of the two paradigms VI and X is that they provide a clear account of the Old Babylonian view of the so-called conjugation prefixes. These constitute the most controversial part of modern Sumerian grammars. No two Sumerologists appear to agree fully on their form, meaning, etymology and identity; the number of ranks that they occupy is equally disputed.

The central part of the grid, ranging from VI§29-71, provides an admirably clear segmentation of these “conjugation prefixes”. This part of the grid treats the indicative forms in six separate groups of six paragraphs each.

From the point of view of the Akkadian grid structure each group covers the six possible combinations of non-causative and causative, no object, accusative object and dative object in regular

alternation: G, Š, G-3A, Š-3A, G-3D, Š-3D, as illustrated above. The six groups themselves are concerned with, in this order:

	Akkadian:	Sumerian:
§29-34:	Stative	prefixes /ã/, /ba/
§36-43:	Preterite	prefix /i ₃ /
§44-49:	Preterite	prefix /mu/
§50-55:	Preterite + t-stem	prefix /ba/
§58-63:	Preterite + t-stem + ventive	prefix /mma/ (written im-ma-)
§66-71:	Preterite + ventive	prefix /m/ (written ma-)

Apart from an insert inside of the /i₃-group (§37-39), there are some inserts between the groups (§35, §56-57, §64-65). The Sumerian conjugation of the preterite groups is of the infix type: it places the subject marker immediately before the base /gar/, while the stative group uses suffix conjugation: it places the marker immediately after it. For more on the two types of conjugation see Section 8.

The first lines of the last group (§66-71) have been printed above, the other groups use different prefixes, but otherwise are basically the same. The Akkadian renderings do not distinguish between the Sumerian prefixes /i₃/ and /mu/.

This gives a total of nine conjugation prefixes in three triples:

stative (/ã/, (/al/), /ba/), main (/i₃/, /bi₂/, /mu/), directional (/m/, /ba/, /mma/).

In the stative triple, /ã/ indicates a straight stative and /ba/ a stative/passive, mirrored by an Akkadian causative; /al/ does not occur in OBG T VI (but in VII and VIII) and therefore has been put in parentheses. In the main triple /bi₂/ occurs in a subtle insert inside the /i₃-group (§37-39). Seemingly the nine prefixes are considered to be mutually exclusive – at least they are treated as such in the paradigms.

In OBG T VI and X the spellings mu- and ma- pointedly mirror non-ventive and ventive Akkadian forms: VI§44: mu-un-gar = *iškun* = “he placed it”, VI§66: ma-an-gar = *iškunam* = “he placed it here”). But the situation is delicate. We posit the underlying morphemes as /mu/ and /m/ respectively, with and without an adjoining vowel, for the following reason. In our paradigms the morpheme /mu/ reflects an Akkadian non-ventive transitive construction and always is spelled mu-. On the other hand, the morpheme /m/ corresponds to an Akkadian ventive, but it admits a variety of Sumerian spellings: am, im, ma or mu, all containing an m; see Section 8 for an explicit example where it is spelled mu-. This suggests that the vowel is not part of the ventive morpheme. Presumably the vowel represents nuances that are lost in the Akkadian rendering – here we are reaching the limitations of an approach to grammar through bilingual paradigms.

Inserts: “I had them place it” versus “I had it placed by them”.

As I have mentioned before, the didactic inserts of OBG T VI generally are trickier to interpret than those of OBG T VII. Apart from a stative insert (VI§35) and the Nt-insert (VI§56) mentioned above I shall deal here with only one more. The /bi₂-insert (§37-39) follows the regular §36 and is among the subtlest and therefore most controversial inserts in our paradigms. I believe it is concerned with subtleties of Sumerian forms that have no counterparts in the Akkadian, and it deserves a detailed discussion. I use it here to illustrate the intrinsic difficulties one encounters when one tries to interpret the meaning and purpose of some inserts in the absence of a teacher’s comments. My morphological analyses and English translations of the Sumerian forms admittedly remain somewhat conjectural.

VI§36	i ₃ -gar	<i>iš-ku-un</i>	he(n, elided) placed it(ø)	Pt	G		
	i ₃ -gar	(<i>aškun</i>)	I(ø) placed it(ø)	Pt	G		
	i ₃ -gar	(<i>taškun</i>)	you(e, assimilated) placed it(ø)	Pt	G		
VI§37	bi ₂ -in-gar	<i>iš-ku-un</i>	he(n) placed it(ø)	Pt	G		
	bi ₂ -gar	(<i>aškun</i>)	I(ø) placed it(ø)	Pt	G		
	bi ₂ -gar	(<i>taškun</i>)	you(e, assimilated) placed it(ø)	Pt	G		
VI§38	bi ₂ -ib ₂ -gar	<i>u₂(!)-ša-aš-ki-in</i>	he(ø) had it(b) placed	Pt	Š		
	bi ₂ -ib ₂ -gar-re-en	(<i>ušaškin</i>)	I(en) had it(b) placed	Pt	Š		
	bi ₂ -ib ₂ -gar-re-en	(<i>tušaškin</i>)	you(en) had it(b) placed	Pt	Š		
VI§39	mi-ni-in-gar	<i>u₂-ša-aš-ki-in</i>	he(ø) had him(n) placed by someone(ni<bi ₂)	Pt	Š		
	mi-ni-in-gar-re-en	(<i>ušaškin</i>)	I(en) had him(n) placed by someone(ni<bi ₂)	Pt	Š		
	mi-ni-in-gar-re-en	(<i>tušaškin</i>)	you(en) had him(n) placed by someone(ni<bi ₂)	Pt	Š		

The sign ø here is used to indicate empty (i.e. not merely elided or assimilated) markers; this concerns in particular suffixed 3rd person direct objects and infixed 1st person subjects.

Several Sumerologists have objected to my interpretations, apparently because these seem to conflict with the modern views of “true” Sumerian. But here I am concerned with the views of the ancient grammarians, and in order to clarify my reasoning I should begin with a discussion of the Akkadian column.

The expression *ušaškin* is ambiguous and can be translated as “he/I had someone place it/him” as well as “he/I had it/him placed (by someone)”. The former is a straightforward transitive construction, while the latter switches the focus from the subordinate transitive agent (the person doing the placing) to the intransitive patient (the thing/person being placed) and hence amounts to an intransitive construction. Morphologically, in the Akkadian expression the leading syllable (*u*) refers to the primary subject (he or I), *ša* indicates causativity, *š-k-n* is the verbal root, and *i* implies the preterite tense. The absence of a personal pronoun (*šū*) implies that the agent (the subordinate subject doing the placing) is an indefinite “someone, they”, while the patient (the thing or person being placed) is not explicitly marked.

After §36, in analogy to the parallel mu-prefix form in §45 (which has mu-ni-in-gar = *ušaškin*, standing for a morphological *mu-bi₂-in-gar, with dissimilation bi₂ > ni after labial + vowel) I would have expected an i₃-prefix form, namely

i₃-bi₂-in-gar = *ušaškin* = he(n) made someone(bi₂) place it(ø)

with Sumerian infix conjugation (that is, the pronoun /n/ mirroring the 3rd person Akkadian subject is infixed). Perhaps a paragraph with this form had been erroneously omitted. Corresponding forms occur in “true” Sumerian; a search through ETCSL^[81] gave several good instances of this construction, for example i₃-bi₂-gu₇ “you fed them”, literally: “you(e, elided) made them(bi₂) eat” (c536.D.78).

Note that the Akkadian *iškun* does not distinguish between the Sumerian i₃-prefix in §36 i₃-gar, the mu-prefix in §44 mu-un-gar, and the bi₂-prefix in §37 bi₂-in-gar. And we also have at least three, perhaps four, different Sumerian interpretations of the Akkadian *ušaškin*: §45 mu-ni-in-gar (plus possibly i₃-bi₂-in-gar), §38 bi₂-ib₂-gar, §39 mi-ni-in-gar. All ought to be consonant with some interpretation of the Akkadian expression, since as a rule the expressions in the two languages appear to be carefully matched. That the paradigms pay careful attention to the matching of the two languages is highlighted in particular by the case of the unusual Nt-stems discussed earlier in this section.

The insert illustrates three contrasts. The first is between §36 and §37, it emphasizes that the Akkadian of the paradigm does not distinguish between the prefixes /i₃/ and /bi₂/. But the mere fact of the juxtaposition of these two paragraphs indicates that the OB grammarians were aware of some semantic difference.

The second, between §37 and §38, remarkably switches not only to the Akkadian causative, but also to the Sumerian suffix conjugation, that is, the Sumerian pronoun mirroring the Akkadian subject now is suffixed. Why this shift? I believe that a question of focus is involved, with §38 bi₂-ib₂-gar

corresponding to the second of the alternative interpretations of the Akkadian *ušaškin* suggested above (“he had it placed (by someone)”), while §45 mu-ni-in-gar and i₃-bi₂-in-gar correspond to the first (“he had someone place it”).

The crux of the morphological interpretation sits in the infix marker /b/. We first note that the Akkadian uses the preterite tense. But in Sumerian, preterite tense suffix conjugation indicates intransitivity, see Section 8. In view of the Akkadian causative, the Sumerian construction thus ought to be interpreted as an intransitive causative construction. It follows that the infix /b/ cannot be a direct object, but must be interpreted as rendering a subordinate subject that is being placed.

This corresponds to the standard construction of intransitive causatives, of which the paradigms offer a few more isolated instances. See also the discussion of intransitive causatives in the modern grammar by Jagersma (2010: 430)^[19], according to which in “true” Sumerian the primary subject is placed immediately after the verbal base and the subordinate subject, or causee, immediately before.

In short, it appears that in our paradigms the infix markers have the following typical functions:

- transitive subject in preterite tense transitive constructions
- direct object in present tense or non-indicative transitive constructions
- subordinate active subject in intransitive constructions of intransitive verbs
- subordinate passive subject in intransitive constructions of transitive verbs

The last two correspond to English constructions of the type “have someone run” and “have someone placed”, respectively. Our interpretation of §38 matches the fourth case.

The interpretation of the third contrast between §38 and §39 is even more delicate. In my opinion the morphology of §39 is /bi₂/-/bi₂/-/n/-/gar/-/ø/, with a doubly dissimilated bi₂-bi₂ > bi₂-ni > mi-ni. Note that Postgate (1974)^[26], based on a distribution argument, had shown that in “true” Sumerian mi-ni stands for bi₂-ni. Thus, we have two(!) subordinate subjects: the infix /n/ is the subordinate subject suffering the action, and /bi₂/ > /ni/ is an impersonal subordinate agent performing the action of placing. The dissimilation /bi₂/ > /ni/ is required because a morphological /ni/ would have resulted in a human subordinate agent and on the Akkadian side in the personal pronoun -šu. By the way, the parallel text OBG X has the form mi-ni-ib₂-gub with an impersonal subordinate subject /b/ suffering the action. The paragraphs §38 and §39 thus would correspond to our second interpretation of the Akkadian *ušaškin* as “he had it/him placed (by someone)”, the first without mirroring and the second with mirroring the part put in parentheses in my rendering of the Akkadian.

Isolated Sumerian forms often permit multiple interpretations. For example, Claus Wilcke (personal communication) would prefer to interpret bi₂-ib₂-gar-re-en as “he had some people place me/you”, and mi-ni-in-gar-re-en as “he had some people place me/you there”, where /ni/ denotes a locative (which would constitute the unique occurrence of /ni/ used as a locative in these paradigms). That is, he proposes to interpret the suffixed pronouns not as primary subjects, but as direct objects, suffering the action. I myself had done so in the case of the anomalous stative/passive VI§34 (see above). There, such an interpretation is feasible, because in the Akkadian column of VI§34 the subject denotes the stative/passive patient of the action. But here, in VI§38-39, the Akkadian subject denotes the primary agent. This creates a conflict between the semantics of the Sumerian and the Akkadian columns: the Sumerian patient would mirror the Akkadian agent. Moreover, the “there” implied by the locative lacks not only motivation but also an Akkadian counterpart. These conflicts violate – in my opinion unacceptably – the otherwise careful matching of the two languages of the paradigms.

Of course I cannot guarantee that my above interpretations are correct. But I hope that, in contrast to the alternatives preferred by Sumerologists, they stay close to the interpretations espoused by the Old Babylonian grammarians – which, after all, are those I want to elucidate.

7. Tenses: “present” and “preterite”?

Given that the grids are based on Akkadian, it seems appropriate to refer to the tenses by the names “present” and “preterite” customary in today’s Akkadian grammars, and to avoid the approximately coextensive Akkadian(!) terms *marû* (“fat”, “slow”) and *ḥamtu* (“quick”, “swift”). These terms are used in some Babylonian grammatical lists to distinguish between different Sumerian verbal bases that translate to the same Akkadian verb; they may suggest a dichotomy between durative and punctual, rather than between tenses.

However, a unilingual Sumerian paradigm, and therefore not constrained by an Akkadian straitjacket, offers evidence that the “present”, using the *marû* base, relates to an unfinished or future action, and the “preterite”, using the *ḥamtu* base, to a finished action. Our main paradigms OBGT VI-X lack negations. But we first note that, as illustrated in several passages of OBGT III, the Sumerian prefixes *nu-* and *na-* are mirrored by the Akkadian negative particles *ula* and *la*, respectively. Before verbs *ula* is a straight “not”, while *la* is used in a prohibitive sense. (By the way, the use of *ula*, instead of the common *ul*, is of interest with regard to dating the paradigms, since it may indicate an early-OB origin.) The interesting fact now is that in the unilingual OB paradigm N3513+N3592, which covers the same verb *gen/du* “to go” as OBGT VII, the prefix *na-* is used with what we have called “present tense”, but is avoided with the “preterite tense”, while *nu-* is used with both. Since you cannot prohibit a finished action, the conclusion is that the “present” tense refers to an unfinished or future action, the “preterite” to a finished action. See Huber (2018: 71)^[15].

The usage of the different bases is far from straightforward. The present tense of “to go” consistently uses the *marû* bases *du* (sg.) and *su₈* (pl.), while the preterite tense uses the *ḥamtu* bases *gen* (sg.) and *re₇* (pl.), see some examples in Section 8. But the complexities go beyond a distinction between present and preterite, and some of them have shown up already in Table 1 of Section 3. Thus, the imperative uses *gen* (both sg. and pl.), the volitive *gen* and *re₇*, the precative *du* and *su₈*. Perhaps the Sumerian volitive is punctual (“I would like to go”) and the precative durative (“let him keep going”)? To complicate matters, *du* and *gen* are written logographically with the same cuneiform sign *DU*, while *su₈* and *re₇* both are written with the composite sign *DU+DU*. Fortunately, the distinctions occasionally become visible through phonetic complements.

8. Split ergativity.

By juxtaposing Akkadian and Sumerian conjugation the paradigms show that the Sumerian verbal system is split ergative. Ergativity is a feature quite foreign to us speakers of one of the common Western languages – it treats the direct object of a transitive sentence like the subject of an intransitive sentence – but it occurs in a minority of completely unrelated languages from every corner of the globe. Among the better known examples are Eskimo, Georgian and Basque (see, e.g., Dixon (1979)^[6]).

Intransitive constructions show suffix conjugation both in present and preterite tense:

VII§22	<i>ba-du</i>	<i>ittallak</i>	he goes away
	<i>ba-du-un</i>	<i>attallak</i>	I go away
	<i>ba-du-un</i>	<i>tattallak</i>	you go away
VII§32	<i>ba-gen</i>	<i>ittalak</i>	he went away
	<i>ba-gen-en</i>	<i>attalak</i>	I went away
	<i>ba-gen-en</i>	<i>tattalak</i>	you went away

In the present tense the verb “to go” uses the *marû* base /du/, in the preterite tense the *hamtu* base /gen/. The suffixed pronouns for the 3rd, 1st and 2nd person intransitive subject are /ø/, /en/ and /en/, respectively.

OBT VIII contains a few fully conjugated present and preterite tense transitive constructions of the two-part verb *kas₄ ... du₁₁ = lasāmum* = “to run”. This verb is construed transitively as “do (du₁₁) a running (kas₄)”. In the present tense it uses suffix conjugation:

VIII§15 *kas₄ am₃-me ilassumam he runs here*
 kas₄ am₃-me-en (alassumam) I run here
 kas₄ am₃-me-en (talassumam) you run here

The morphology is /m/-/b/-/e/-/e/, /m/-/b/-/e/-/en/, /m/-/b/-/e/-/en/, where /m/ is the ventive, /b/ the direct object referring to *kas₄*, the first /e/ the present tense *marû* base corresponding to the preterite tense *hamtu* base *du₁₁*. In transitive constructions the suffixed 3rd person pronoun is not /ø/, but /e/.

But in the preterite tense transitive constructions use infix conjugation:

VIII§19 *kas₄ mu-un-du₁₁ ilsumam he ran here*
 kas₄ mu-du₁₁ (alsumam) I ran here
 kas₄ mu-e-du₁₁ (talsumam) you ran here

The infixed pronouns for the 3rd, 1st and 2nd person subject are /n/, /ø/ and /e/, respectively. Rather exceptionally, they are spelled out in this paragraph. The suffixed 3rd person direct object marker /ø/ referring to *kas₄* is invisible. Note that the ventive here is written *mu-*.

The conclusion is that the Sumerian verbal structure exhibits a familiar type of ergative split. Namely: in the preterite, but not in the present tense, they treat the direct object like an intransitive subject by placing it in suffix position.

Appendix

In this appendix I am trying to place the Old Babylonian version of linguistics into the general pre-modern science context. The group of texts I have treated here is an isolate, with at best tenuous connections to whatever has been preserved in the literature, cuneiform or otherwise. We must address synchronic and diachronic aspects: the place of OB linguistics in the contemporary early science scene, and its place in the historical development of linguistics. In my opinion, among the contemporary endeavors apart from linguistics, only mathematics classifies as early science, while “wisdom literature” at best occupies a marginal position as a precursor of philosophy. Astronomy, as the earliest representative of a natural science, came much later. In linguistics, other meaningful works are unrelated and dated more than a millennium later. With the help of a few selected examples I intend to illustrate what kind of mathematical and philosophical endeavors were around at the relevant time and how they were presented.

Mathematics.

Here are two examples from Old Babylonian mathematics. They were selected to illustrate both the style of the OB presentation of non-trivial mathematical problems, which involves both algebraic and geometric thinking, and the headaches they can cause to our modern interpretation. The OB

mathematicians conveyed their ideas either through worked-out examples or through tables. They surely added oral explanations. Unfortunately the latter are lost to us.

VAT 8512

The first is the text VAT 8512, published by Neugebauer (1935: 340-345)^[23]. It is one of the rare texts where we can reconstruct the thought processes of the ancient mathematician. Here I mostly follow the treatment in Huber (1955)^[12]. The text does not contain a figure but clearly is concerned with a triangle. That triangle is split in two parts by a separating line parallel to the basis, see Figure 1.

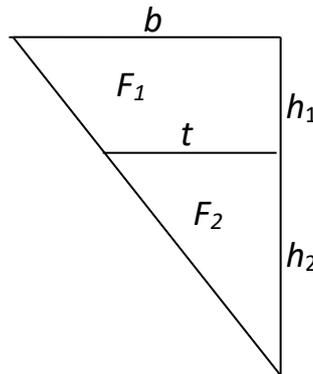


Figure 1

The text gives the base b as 30 and states that the upper area exceeds the lower area by 7, and the lower height exceeds the upper height by 20. It then asks: how much are the heights, the separating line, and the areas?

Thus we are given

$$\begin{aligned} b &= 30 \\ F_1 - F_2 &= D = 7,0 \\ h_2 - h_1 &= d = 20 \end{aligned}$$

The text first calculates the length t of the separating line. It carefully describes the steps of the calculation, but does not justify them. In modern terminology they amount to the stepwise evaluation of

$$(1) \quad t = \sqrt{\frac{1}{2} \left\{ \left(b + \frac{D}{d} \right)^2 + \left(\frac{D}{d} \right)^2 \right\}} - \frac{D}{d}$$

It begins by calculating $D/d = 21$, as follows: “The reciprocal of 20, by what the lower height exceeds the upper height, take and multiply 0;3 with 7,0, by what the upper area exceeds the lower area; 21 let your head keep (*re-eš-ka li-ki-il*)”. Note that division is performed by multiplication with the reciprocal. Later on, the calculation re-uses the result twice and references the number 21 first as *ša re-eš-ka ú-ka-lu* “what your head keeps”, and then as *ta-ki-il-tam* “what is kept”. In my opinion all three expressions derive from the verb *kullum* “to hold back”, the third being the accusative form of a verbal adjective. This discussion of these terms is of some relevance also for the Plimpton 322 text.

But how did they arrive at (1)? Neugebauer had conjectured that they had derived a quadratic equation for t :

$$(2) \quad t^2 + 2\frac{D}{d}t = \frac{D}{d}b + \frac{b^2}{2}$$

solved it for t :

$$t = \sqrt{\left(\frac{D}{d}\right)^2 + \left(\frac{D}{d}b + \frac{b^2}{2}\right) - \frac{D}{d}}$$

and then tacitly transformed this expression to (1).

There is no doubt that the Babylonians would have been capable to solve the problem like Neugebauer via the quadratic equation (2). But in my opinion it is highly unlikely that they did so. First, even in our modern representation the possibility of a transformation to (1) is not easy to see. Second, it presupposes that the right hand side of the quadratic equation (2) had not been numerically evaluated, contrary to customary Babylonian procedures. And why they should have made such a transformation remains unexplained.

However, it is possible to give a train of thoughts that lead directly to the expression (1), as follows. We join a rectangle with width c to the triangle such that the area of the resulting trapezoid is halved by the extended separating line (see Figure 2).

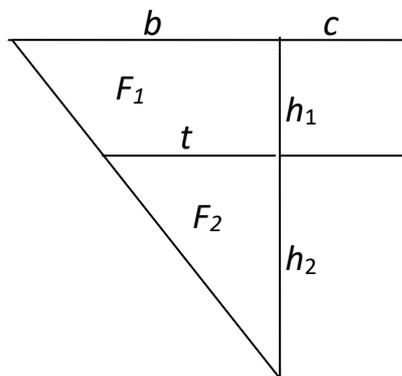


Figure 2

If we denote the width of the rectangle by c , then the top width of the trapezoid is $b' = b + c$, and the length of the separating line is $t' = t + c$. The condition that the area of the trapezoid is halved is $F_1 + c h_1 = F_2 + c h_2$, hence $c = \frac{F_1 - F_2}{h_2 - h_1} = \frac{D}{d}$. Now some other texts (e.g. AO 17264) show that the length t' of the halving line of a trapezoid with widths b' and c satisfies

$$t' = \sqrt{\frac{1}{2} (b'^2 + c^2)}$$

But this is the same as (1), if we insert the values of t', b', c . Incidentally, a few lines after the calculation of t the text unnecessarily re-calculates the given b as $b = b' - c$, an oversight proving that the ancillary b' had displaced b in the course of the solution of the problem.

There can be hardly any doubt that the Babylonian author of our text has arrived at the solution via a geometric bypass, namely by reducing it to the already solved problem of halving a trapezoid. The remarks by Neugebauer and Sachs (1945: 37)^[24] concerning a class of problems involving triangles and trapezoids and their subdivision: "Although these problems are sometimes accompanied by figures ... and although their terminology is geometrical, the whole treatment is strongly algebraic," thus ought to be somewhat tempered. Of course this does not change the fact that Babylonian mathematics has a strongly algebraic character.

By the way, I probably should point out that while the task of splitting a trapezoid in two equal parts is a realistic inheritance problem (and is treated as such in some texts), the problem of VAT 8512 is an artificial one, concocted as a challenge for students.

Plimpton 322

The Old Babylonian mathematicians clearly knew that the width a , the length b and the diagonal c of a rectangle satisfied $a^2 + b^2 = c^2$ (“Pythagorean theorem”, more than a millennium before Pythagoras!). The big surprise came when the text Plimpton 322, published by Neugebauer and Sachs (1945: 38-41)^[24], showed that they even had a general method for constructing integer valued Pythagorean triples a, b, c . This is perhaps the best known and most notorious Babylonian mathematical text, and it has stimulated inordinately many publications. I shall base my discussion on the compact original publication of Neugebauer and Sachs and only add a few tidbits from the review by Britton et al. (2011)^[5]. It is not the place here to enter into the details of the latter authors’ highly ingenious hypothetical reconstruction of the thoughts of the ancient mathematicians.

The preserved part of the tablet contains four columns (there must have been some more materials to the left of them). It lists 11 Pythagorean triples but it will suffice to discuss the first of the 11 lines, concerned with the triple 119, 120, 169. In its four columns that line presents the sexagesimally written numbers

1,59,15 1,59 2,49 1

The second and third numbers are the sexagesimal representations of 119 and 169, and the headings above them have “*ib-si₈ sag*” and “*ib-si₈ ši-li-ip-tim*”. Roughly, this means “solving number of the width” and “solving number of the diagonal”. The Sumerian verbal form *ib-si₈* (current custom prefers the transliteration *ib-sá*) means “it reaches”, but is treated as a noun in these Akkadian texts. The fourth column trivially numbers the lines.

The first column needs discussion. The heading above it is a damaged Akkadian sentence, transliterated by Neugebauer and Sachs as

[*ta-k*]i-il-ti ši-li-ip-tim [*ša in-*]na-as-sà-*hu-ú*-[*m*]a sag i-...-ú.

The first word (if restored correctly) may be a term referring to an intermediate result (as in VAT 8512). Then, after the clear word “diagonal”, a subtraction is performed. Finally the “width” (*sag*) is mentioned, followed by an unclear verbal form.

In my opinion the most convincing explanation of how the triples were derived is that their construction involves a reasonably detailed list of reciprocal numbers. The latter must have contained entries with up to four sexagesimal digits and thus have been more comprehensive than the standard small reciprocal table at the beginning of the ubiquitous multiplication tables belonging to the Babylonian school curriculum. Note that the Babylonians performed division by multiplication with the reciprocal value. To a person having such a detailed table at hand, the construction of Plimpton 322 would have amounted to a straightforward play with numbers.

Accepting that they had access to such a table, the first line would be based on the reciprocal pair

$$\alpha = \frac{12}{5} = 2; 24 \qquad \alpha^{-1} = \frac{5}{12} = 0; 25$$

We use Neugebauer’s convention to separate sexagesimal digits by commas, and to separate integers from the fractional part by a semicolon. Then let

$$A = \frac{1}{2}(\alpha - \alpha^{-1}) = 0; 59,30 \qquad B = 1 \qquad C = \frac{1}{2}(\alpha + \alpha^{-1}) = 1; 24,30$$

and note that $A^2 + B^2 = C^2$, with $C^2 = 1;59,0,15$. Note that the Old Babylonian notation does not have a zero 0, nor place value notation, and thus it writes 1,59,15, rendered by Neugebauer's modern translation as 1;59,0,15. Occasionally, but not systematically, the gap between the digits would be indicated by an extended spacing. As a final step, we turn the fractional triple A, B, C into three integers by multiplying them with a suitable coefficient b :

$$a = 1,59 \qquad b = 2,0 \qquad c = 2,49$$

Curiously, the coefficient b , which equals the size of the normalized length of the rectangle, is not listed. This way, apart from a few scribal errors, we can reconstruct the table of Plimpton 322. It turns out that the first column lists C^2 , and the ordering of the entries is inherited from the monotone ordering of the table of reciprocals. Britton et al. (2011)^[5] argue from the curvature of the clay tablet that two columns are lost on the left, and that they had contained listings of A and C . Alternatively, they might have contained listings of $\alpha = C + A$ and $\alpha^{-1} = C - A$.

The heading above the first preserved column, by mentioning the diagonal, a subtraction and the width, seems to draw attention to the fact that A^2 can be found by subtracting 1 from C^2 . Britton et al. (2011: 526)^[5] therefore propose to read the heading as

[*ta-k*]i-il-ti ši-li-ip-tim [ša 1 in-]na-as-sà-ḥu-ú-[m]a sag i-il-lu-ú
 “the *takiltum* of the diagonal (from) which 1 is subtracted and (that of) the width comes up”.

Both the derivation and the meaning of *takiltum* have been contested. I believe that as in VAT 8512 it derives from *kullum* “to hold back” and refers to an unspecific auxiliary result. But several authors attribute it the specific meaning “square”, which of course here would fit perfectly.

Early philosophy.

Father-son instructions.

The earliest “Wisdom texts” apparently were father-son instructions concerning prudent human behavior. They seem to go back to the early dynastic period in the middle of the 3rd millennium BC. The earliest preserved collection (from about 1900-1800 BC) are the *Instructions of Šuruppak*, supposedly given by an unnamed “Man of Šuruppak” (presumably the ruler of that city) to his son Ziusudra, the later Sumerian Flood hero. They are published by B. Alster (2005)^[2]. Two such sayings may suffice, here quoted from Alster's translation in Hallo (2003, vol. I, p. 569)^[11]:

14. Do not buy a donkey that brays; it will split your people.

33. Do not laugh with a girl who is married; the slander is strong.

Parables.

Some of the neatest wisdom in the form of parables can be found in a bilingual Hurro-Hittite text from Bogazköy/Hattuša. The text was written around 1400 BC, but the Hurrian original may be considerably older. Here is an example. I quote it from Beckman's translation in Hallo (2003, vol. I, p. 216)^[11], which is superior to that provided by Neu (1996: 74-77)^[22] in his text edition.

(ii 1-16) A mountain expelled a deer from its expanse (lit., 'body'), and the deer went to another mountain. He became fat and he sought a confrontation. He began to curse the mountain: "If only fire would burn up the mountain on which I graze! If only the Storm-god would smite it (with lightning) and fire burn it up!" When the mountain heard, it became sick at heart, and in response the mountain cursed the deer: "The deer whom I fattened up now curses me in return.

Let the hunters bring down the deer! Let the fowlers capture him! Let the hunters take his meat, and the fowlers take his skin!"

(ii 17-21) It is not a deer, but a human. A certain man who fled from his own town arrived in another land. When he sought confrontation, he began to undertake evil in return for the town (of his refuge), but the gods of the town have cursed him.

Astronomy.

Systematic astronomical observations seem to have begun only in the 8th century BC, and the invention of serious astronomical calculations now can be dated to the time between 640 and 590 BC (calculation of Lunar Sixes), see Huber and Britton (2007)^[16] and Huber and Steele (2007)^[17]. I do not think that the celestial observations, which since the 3rd millennium formed the basis of omen astrology, can be regarded as early natural science.

Linguistics.

Apart from the OB linguistic material treated in the present paper, the only other serious early grammatical works I know of are the Sanskrit grammar by Panini (5th or 4th century BC), the Greek grammar by Dionysius Thrax (2nd century BC) and the Latin grammar by Varro (1st century BC). They are more than a millennium younger and unrelated to the Sumerian material. By far the most interesting and important among them is Panini's grammar; see Böhlingk (1887)^[4]. The nearest spiritual relative of Panini's style of presentation appears to be the modern Backus-Naur notation! For the latter see Naur (1960)^[21].

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