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RESEARCH REPORT

EXPLORING **VARIATION AND CHANGE** IN THE DISTANT PAST

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ABSTRACT

This article explores the potential of analysing language variation and change in written records dating back to the earliest stages of the time period conventionally termed 'historical'. In particular, it considers the suitability of Old Babylonian data, a Semitic language from the early II millennium BCE, as object of historical sociolinguistic investigation. A case study focuses on the representation of sibilants in texts from a relatively extensive corpus of letters. Its analysis is framed within the scope of testing the temporal limits of variationist approaches to language change and its uniformitarian premises. The study offers detailed linguistic insights from textual documentation going back nearly four thousand years, a period in which most languages spoken remain undocumented (i.e., are 'prehistorical'), and can only be inferred or reconstructed.

RESUMEN

Este artículo explora el potencial de analizar la variación y el cambio lingüísticos en registros escritos que se remontan a las primeras etapas del período convencionalmente denominado «histórico». En concreto, considera la idoneidad de la documentación del paleobabilonio, una lengua semítica de principios del II milenio a. c. e., como objeto de investigación histórico-sociolingüística. El estudio se centra en la representación de sibilantes en textos de un corpus epistolar relativamente extenso. Su análisis se enmarca dentro del objetivo de poner a prueba los límites temporales de los enfoques variacionistas del cambio lingüístico y sus premisas uniformitarias. El estudio ofrece una visión detallada de variación lingüística a partir de una documentación textual que se remonta a casi cuatro mil años, un periodo en el que la gran mayoría de lenguas

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coetáneas permanecen indocumentadas (es decir, son «prehistóricas»), y sólo pueden inferirse o reconstruirse.

KEYWORDS
Language Variation and Change; Ancient Languages; Uniformitarian Principle.

PALABRAS CLAVE
Variación y Cambio Lingüístico; Lenguas Antiguas; Principio Uniformitario.

INTRODUCTION

The exploration of linguistic features for languages of the past is a challenging task. We can go back a long way in time to investigate some general dynamics of linguistics features prior to their direct attestation. The modelling of language traits through probabilistic comparative analyses and reconstructions offers a unique insight into such pre-documented language dynamics in the distant past (e.g., Dunn *et al.,* 2011; Carling; Cathcart, 2021). Nevertheless, to analyse the particulars of the process of language change, the co-existence of competing linguistic forms in language variation, and their socio-historical embeddings, we are constrained to analysing attested forms of language usage. For the vast majority of our past —before the earliest audio-recordings in the second half of the 19th century— such attested language comes in the form of written documentation. Spoken language is of course not identical to written language, but the latter remains a linguistic domain which has the ability of capturing *fossilized* language communication from afar spaciotemporal settings.[1] In as much as it represents a linguistic phenomenon, it can be argued that written language (and the variation and change it preserves) deserves linguistic research, as does spoken language (Romaine, 2009, p. 14–21).

The field of historical sociolinguistic research deals with the aforementioned questions —as well as others, such as the conscious or unconscious acts of social identity represented in written records (Auer *et al.,* 2015, p. 9)— by analysing diverse corpora of historical languages. The field initially focused mostly on well attested post-medieval European languages (e.g., Nevalainen; Raumolin-Brunberg, 2003; Rutten; van der Wal, 2014) but, as the present special issue demonstrates, its scope has rapidly become much wider. However, not all written records are equally suitable for this endeavour. In diachronic terms, it is reasonable to expect major limitations in sociolinguistic approaches to ancient languages. This leads to the question: how far back in time can we go to study variation and change in languages?

Some notable studies of classical languages have swiftly followed the (historical) sociolinguistic route, assessing how social-historical cues relate to the preserved record of languages such as Latin or ancient Greek (e.g., Adams, 2013; Clackson, 2015; Mullen; James, 2012).[2] By contrast, ancient languages are often seen as too far removed from sociolinguistic practices and too fragmentary, formulaic or uncertain to allow for informed assessment on variation. An illustrative example of the justified scepticism about sociolinguistic research on ancient languages at the turn of the century

1 Note that *fossilized language* is used here metaphorically to refer to written language that attests or relates to language(s) of the past. In this sense it has no connection to the concept of 'fossilization' in Second Language Acquisition studies.

2 A study of an older Indo-European language in the same sociolinguistic vein that is worth mentioning is the analysis of Luvian in Yakubovich (2009).

concludes that "a more than anecdotal sociolinguistic interpretation of linguistic data of a remote past is beset with near-insurmountable difficulties." (Winter, 1999, p. 79).[3] Happily, the available data and the capabilities of present-day computer technology are notably enhanced compared to those of past research efforts.

For ancient languages, it is also worth considering what a researcher might consider achievable. Whilst the aims of a sociolinguistic project working on, say, present-day Javanese, would inevitably differ from those of researchers looking at data obtained from XVIII century Dutch letters, for languages further down the timeline the level of expectations must correspondingly have a lower resolution. Determining whether insights into the co-occurrence of linguistic and extralinguistic factors is relevant for early attested languages depends on this scale. On the other hand, there are still requirements that need to be fulfilled in order to achieve reliable results. As Winter rightly pointed out, sociolinguistic conclusions about languages of the past depend on "the availability of extralinguistic information and on the nature of the texts one can use" (Winter, 1999, p. 79).

A complementary expectation regarding languages of the distant past is that they would have behaved in a fundamentally similar way to languages of the present. This common assumption is one of the various interpretations of the otherwise loose notion referred to as the uniformitarian principle (Walkden, 2019). The principle plays an important role in various branches of linguistics, notably in historical linguistics and in typology (Song, 2018, p. 22–26). From a sociolinguistic perspective, the patterns in which languages vary in present-day languages are expected to be similar to those that operated in the past (Romaine, 1988, p. 1454), though particular attention must be taken not to engage in anachronistic assumptions regarding the social structures of past communities (Bergs, 2012).[4] Labov's take on uniformitarianism gives some defined temporal parameters: "the forces operating to produce linguistic change today are of the same kind and order of magnitude as those which operated *five or ten thousand years ago*" (Labov, 1972, p. 275) [emphasis added]. The present article presents data that is not quite as remote as Labov's reference but is not far from it: it dates back almost four thousand years. It is indeed closer to the time horizon mentioned by Labov than most other attested languages, and its antiquity doubles the temporal span that separates XVIII century Dutch letters in Rutten & van der Wal (2014) from Latin texts in Adams (2013). Despite its age, this linguistic data are quantitative and qualitatively valuable and can be informative for research on language variation and change.

The following section (2) introduces the characteristics of Old Babylonian and its textual record. It also presents some studies on variation in languages that are even older than the Old Babylonian

3 Note that Winter's comments followed from the conclusions of an exploratory study on Tocharian B.

4 Another important caveat regarding the uniformitarian principle and 'prehistoric' sociolinguistics is the possibility for different social factors (which might differ in time) to have a significant effect on language structures (Trudgill, 2020a, p. 7–16; Trudgill, 2020b).

record. Section (3) focuses on the study of a particular variable in a corpus of Old Babylonian letters, presenting data from Hernáiz (2020) and confronting it with new data extracted from an additional group of 219 letters. The last section (4) offers some conclusions, bringing the results of the case study to the general discussion points introduced here.

1. LANGUAGE VARIATION (AND CHANGE) IN THE DISTANT PAST: OLD BABYLONIAN

The reference to a historical juncture as *distant* is, of course, inherently relative. Its significance is contingent on specific temporal parameters or, more broadly, on our perspective within a given context. At the risk of giving the reader the wrong impression that the article is about some time in the early Holocene (or before), the deliberate choice of the term *distant* in the title underscores the reference being made to the *earliest* period with recorded evidence of language variation and change. Additionally, the term serves the purpose of highlighting the antiquity of the temporal frame discussed here, which is not sufficiently stressed by terms such as *ancient*. Western conventional segmentations of the past into *ancient history*, *medieval history*, *modern history*, etc., do not correspond to uniform temporal intervals and may inadvertently obscure the true temporal extent of each period. While Classical Latin and early Akkadian are both considered ancient languages (i.e., spoken in *antiquity*), the distance between their respective written evidence is about two thousand years, in turn, the same distance that separates Classical Latin from present-day languages. On the other hand, the absolute chronology of the Old Babylonian record shows that it is in fact contemporary to events that are typically perceived as *distant* in time. For example, while Old Babylonian texts were written in western Asia, contemporaneously, people in Southern Britain were engaged in the final stages of constructing the Stonehenge complex. In most other parts of the world, this same period effectively qualifies as *prehistory*, implying that the languages spoken there and then can only be inferred through reconstructions based on comparative analyses of related documented languages. Old Babylonian is temporally *distant* enough to be dated to an intermediate period between some of these *proto-languages*, such as Proto-Indo-Iranian and Proto-Indo-Aryan.

Whilst Old Babylonian (Semitic: Iraq: ca. 4000-3500 YBP) stands as one of the earliest documented languages, it is by no means the oldest language record for which some kind of variation

can be established.[5] Nevertheless, the focus of the present study on Old Babylonian is simply driven by the sheer volume of textual evidence available for this language, offering an exponentially greater amount of texts compared to older attested languages. The wealth of data allows for a more comprehensive documentation of (written) language use and its variation and change with a surprising high-level resolution, considering its antiquity. Old Babylonian was profusely used in written documents of different genres (administrative, letters, literary, scientific, monumental etc.) over a region comprising most of today's Central and Southern Iraq and adjacent regions in Syria. Current estimations suggest that around 50,000 Old Babylonian texts are known to scholars (Streck, 2022, p. 2),[6] making OB the best attested variety of the overarching linguistic clade that we call Akkadian language. It should be mentioned that Akkadian —unlike other ancient languages such as Ancient Greek, Latin or, to a lesser extent, Hittite— remains a language relatively unexplored by general linguists. And this is despite its large textual record and the fact that it is one of the few languages for which documentation spreads fairly consistently over two millennia (with its potential for historical linguistic research). According to the website of the Department of Near Eastern Languages & Civilizations at Yale University, the available corpus of Akkadian (more than half a million documents!) is "larger than that of classical Latin and surpassed in size by only one ancient language, Greek".[7] The volume of documentation and our growing knowledge about its historical embeddings, therefore, make Akkadian in general and Old Babylonian in particular, reasonable candidates to meet the above-mentioned conditions for conducting historical sociolinguistic research in ancient languages.

On the other hand, historical sociolinguistic research on Old Babylonian is unsurprisingly fraught with methodological and documentary challenges. To the limitations of any historical sociolinguistic study (such as the need to work exclusively on written language, the accidental nature of the record, the lack of representativeness for certain groups, etc.) we need to add the fragmentary state of part of the documentation, the uncertainties about the specific temporal and geographical coordinates from which the documents stem, the elusive information concerning the social structure of ancient Mesopotamia, the question of scribal education and the potential use of writing by non-professional scribes.[8] Nonetheless, the case study presented in the next section shows the results of analyses on

5 Old Egyptian (ca. 4600–4000 YBP), for example, presents signs of variation with respect to text types (see Almansa-Villatoro, 2023). For the more or less contemporary Sumerian language, some particular features have been associated to temporal or dialectal variables (Jagersma, 2010, p. 4–9), whilst Emesal —the variety of Sumerian found in some literary texts and usually associated to female characters— has been known for a long time (see Garcia Ventura, 2017). Also, Old Akkadian (ca. 4500–4100 YBP), an earlier Akkadian precursor of Old Babylonian, subsumes a range of lectal varieties in space and time, some of which associate to central administration practices as opposed to other scribal centres (see Sommerfeld, 2021).

6 With more than three million estimated tokens of text (Streck, 2022, p. 2).

7 Akkadian | Near Eastern Languages & Civilizations (yale.edu) [accessed 05/12/2023].

8 See Charpin (2010) for an insightful approach to this question.

a corpus of ca. 1800 Old Babylonian letters[9] for which certain language-external information exists regarding the individuals, the time, or the region associated to the production of the texts.[10] The representability of the data in the corpus is constrained by the unbalanced proportion of letters that relate to specific areas, periods or individuals, an issue that is naturally related to the intricacies of the archaeological findings and the publication of texts' editions. But although the record is accidental and uneven, the use of various types of data from interdisciplinary sources can be applied to Old Babylonian —with the appropriate caveats— just as it is indeed applied elsewhere in historical sociolinguistic research (Lauersdorf, 2021). A truly interdisciplinary approach that incorporates any information (linguistic or else) is, of course, more informative. In spite of the limitations and potential inadequacies in text classification, a comparison of a large volume of textual material unveils cohesive patterns that support the overall validity of the classification of texts in certain spatiotemporal categories. Although most texts analysed in section 3 contain no direct reference to a specific date, some of the writers (or rather the *senders* of the letters) can be identified by parallel archives. In other instances, allusions to historical figures or archaeological data provide crucial clues for approximating a general chronological timeframe. A notable convergence of orthographic and linguistic variants tends to occur in specific segments of the corpus, implying that the criteria utilized for the regional and temporal taxonomy of the texts has a nontrivial degree of relevance for a preliminary categorisation (Hernáiz, 2020).

Akkadian varieties neighbouring Old Babylonian are also well-known (especially Old Assyrian), but the present study focuses on exploring the internal variation within documents from the core Old Babylonian area of Mesopotamia (i.e., excluding other variation documented in 'peripheral' areas such as the Middle and Upper Euphrates basin or the Khabur area of modern Syria).[11] Hence, the restricted object of study here is the central Babylonian variety (commonly regarded as its 'classical' form), which forms the basis for most grammars of Akkadian, and has been typically regarded as a sort of standardised chancery variety from the time of King Hammurabi of Babylon (Soden, 1995, p. 3). Against this view, Westenholz (2006) describes the language of this period as "a language in lively development [...] without any fixed written norm" (Westenholz, 2006, p. 254). This core Mesopotamian area is a fertile plain of about 310 km on a straight line from the southern city of Ur to the northern city of Eshnunna,[12] delimited by desert to the west and mountain ranges to the east. It was communicated by the course of the rivers Euphrates and Tigris plus a well-developed net of

9 Annotated Corpus of Old Babylonian Correspondence (ACCOB) (see Hernaiz, 2020).

10 Importantly, the language in (Old Babylonian) Akkadian letters is certainly less formulaic and more varied in subjects and language structures than most other types of attested documentation, such as often repetitive administrative accounts or more rigidly structured contracts or religious texts.

11 For Old Assyrian see Kouwenberg (2017).

12 The remains of ancient Ur and Eshnunna are situated in modern Tell el-Muqayyar and Tell Asmar (Iraq), respectively.

canals. The region, however, was not socio-politically uniform. Throughout the OB period (particularly in the first half) several state entities controlled their own territory and resources, often engaging in hostilities or alliances with their neighbours. The texts of the corpus are conventionally divided into three categories, according to three broad regions commonly distinguished in studies on Old Babylonian documents: a southern region (the area that had been the homeland to Sumerian speakers before this period), a northern region (with Babylon as its centre) and the valley of the Diyala river, near modern-day Bagdad.

Figure 1. Map of central modern Iraq showing the location of Old Babylonian centres: Shaduppum (in grey, Diyala region), Babylon (in black, northern region) and Larsa (in white, southern region). Source: Map based on Urutseg, licensed under CC0, via Wikimedia Commons, modified by Rodrigo Hernáiz.

2. CASE STUDY: OLD BABYLONIAN /S/ IN SPACE AND TIME

Despite the fact that Akkadian ceased to be spoken about 2000 years ago, two centuries of philological scholarship and the relatively straightforward comparison of Akkadian texts with other better-known Semitic languages have allowed a good understanding of its typology, lexicon and general phonological traits. The present study seeks to investigate the written realization of a phoneme, conventionally rendered /s/, in the corpus of Old Babylonian letters. But is it possible to detect any signs of sound variation in a language whose record predates the earliest alphabetic scripts?

The cuneiform writing system used in the production of Old Babylonian texts consisted of different types of signs. The most important ones are logograms (word-graphemes with no direct relation to

sounds) and syllabograms, which represent combinations of consonants and vowels.[13] Fortunately, the OB epistolary genre exhibits a greater use of the latter, compared to other text genres. This study focuses exclusively on the assessment of consonant-vowel syllabograms with the onset consonant /s/. This phonemic unit is in fact a conventional way to refer to a sound which corresponds to voiceless sibilant phonemes in Semitic cognates. However, the realisation of this notional phonemic unit was probably not uniform throughout diachronic (or diatopic) varieties of Akkadian.

In the earliest period (Old Akkadian), /s/-syllables were spelled with a set of graphemes conventionally labelled ZA, ZI and ZU (henceforth Z-signs). These signs were also used in the spelling of voiced and 'emphatic' sibilants.[14] Based on language-internal cues and Semitic comparative analyses, it is widely accepted that Old Akkadian /s/ was in fact an affricate [t͡s] (Faber, 1985; Sommerfeld, 1995; Streck, 2006). By the Middle Babylonian period —about five hundred years later— voiced and 'emphatic' sibilants continued to be represented by Z-signs. However, /s/ was then consistently rendered by a different set of syllabograms, namely SA, SI, SU (S-signs).[15] The explanation invoked for the orthographic change is that a sound change (deaffrication) occurred at some point in the history of Akkadian, as well as in other Semitic languages (Sommerfeld, 1995). According to this, said change —a completely normal sound change, widely attested typologically in many languages— is responsible for the orthographic shift from Old Akkadian (Z-signs) to Middle Babylonian (S-signs).

But what is the situation in the intermediate period between Old Akkadian and Middle Babylonian? The answer is that Old Babylonian exhibits both sets of Z-signs and S-signs to render syllables with onset /s/. Thus, the Old Babylonian corpus contains variation and comprises a relatively wealthy number of texts, two necessary conditions for variationist research. Additionally, a growing amount of information continues to be published regarding social, economic and political issues of the time (e.g., Charpin; Edzard; Stol, 2004), or about families and individuals mentioned in Old Babylonian archives (e.g., Jacquet, 2013). A research question arises as to what a historical sociolinguistic investigation of the corpus of OB letters can tell us about this type of variation in spelling, within the context of a plausible sound change.

In the 1940's, German scholar Albrecht Goetze published an observation on the spelling of sibilants in a group of Old Babylonian mathematical texts (Goetze, 1945). In this article and in a subsequent piece (Goetze, 1958), Goetze established the influential idea of a dialectal distinction in Old Babylonian, whereby northern areas of the core Mesopotamian milieu were characterised by the

13 The Akkadian set of syllabograms also includes signs representing single vowels.

14 That is, /z/ and so-called *emphatic* /ṣ/. The latter corresponds to Arabic ص and to glottalized sibilants in modern Ethio-Semitic languages (see, i.a., Huehnergard, 2018, p. 2).

15 Importantly, these symbols were not novel creations; they had previously been employed in Old Akkadian to represent other sibilant phonemes.

use of S-signs to represent /s/, while southern areas exhibit Z-signs in the same environments. This geographic explanation for the variation has been tacitly challenged by the more recent observation that the choice of signs may be dependent on the phonetic context in which /s/ is embedded. This new explanation was articulated in Sommerfeld (1995) and has proven to be consistent in a number of Old Babylonian texts (Streck, 2006). The general pattern observed can be summarised as follows:

- Z-signs are used in word initial and in double /s/ (either geminated or resulting from the contact between a stem-final sibilant or dental and a bound pronoun with onset sibilant). For example:
  sakāpum ('to push') would appear written with the sign ZA (as word-initial): ZA-KA-PU-UM
  issakip ('he was pushed') would also occur with ZA (as double /s/): IZ-ZA-KI-IP
- Non-initial short /s/ would be rendered by S-signs:
  isakkip ('he pushes'): I-SA-AK-KI-IP

This pattern strongly suggests that the eventual change in writing practices (from Old Akkadian Z-signs to later Babylonian S-signs) was ultimately motivated by a sound change in spoken usage. The idea behind is that a possibly deaffricate articulation would be first perceived mostly in intervocalic environments, whereas its (possibly affricate) allophone would still be articulated or perceived in word-initial or double instances. This is not to say that written features correspond unequivocally and in complete synchrony to spoken sounds, consistently mirroring their variation. However, the eventual shift in the writing of the phoneme conventionally denoted as /s/ seems to be motivated —asynchronously as this should be— by a sound change which at some point affects certain phonetic environments more prominently than others.

In any case, how does this phonologically motivated pattern align with the diatopic variation suggested by Goetze? Are we to conclude that OB mathematical texts adhere to different scribal traditions in rendering /s/ compared to other genres? The analysis of the large corpus of OB letters sheds light on these questions. The bulk of the letters included in the Annotated Corpus of Correspondence in Old Babylonian (ACCOB) shows that the general distribution of consonant-vowel syllabograms representing /s/ by means of Z- and S-signs is predominantly consistent with the 'allophonic pattern'. However, there are also diatopic and diachronic signals that have an effect on the distribution of the data. To consider the differences in the variable (S-sign, Z-sign) from a geographical point of view, Hernáiz (2020) collects all the instances of consonant-vowel syllabograms with onset /s/ in the ACCOB corpus, controlling for the categorization of the three main areas discussed previously: northern-related letters, southern related letters and letters related to the Diyala valley. Each region presented different ratios of use of Z-signs of S-signs. The graph in Figure 2 shows the occurrence of both variants in word-initial and double /s/, i.e., the contexts where one would expect to find Z-spellings, according to the phonologically motivated pattern mentioned before.

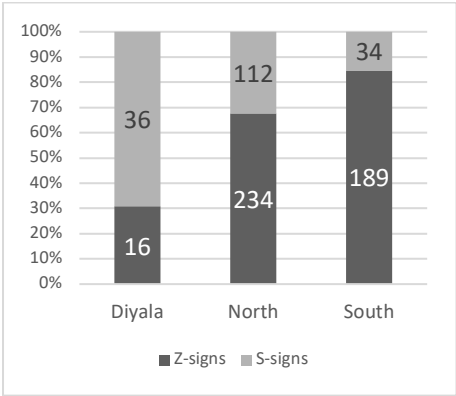

Figure 2. Instances of Z- and S-signs for contexts where Z-signs would be expected by their phonological context (Hernáiz 2020).

The data indicate a statistically significant distinction among the three areas, despite the uneven number of texts/occurrences within each of the subgroups (Pearson's Chi-squared test data for independence: X-squared = 2.623, df = 2, p-value = 5.553e-10).[16] Most striking is the distinct preference for S-signs in the Diyala area, preceding the spelling practice of /s/ in later Middle Babylonian. This particular characteristic of the Diyala texts has already been observed by Sommerfeld (2006), who speaks of a deaffrication process being discernible already in Old Babylonian texts from this region. A closer analysis of the data reinforces the peculiarity of the Diyala texts: 6 of the 16 'expected' instances of Z-spellings in the Diyala group belong to a subgroup containing the very earliest OB texts in the corpus (Whiting, 1987). Unlike the rest of the Diyala group, this small early subgroup is consistent with the 'allophonic pattern' and shows no signs of deaffrication.

In sum, while the northern- and southern-related letters present a fairly consistent distribution of Z-spellings in word initial and double /s/, the Diyala letters (except for the very earliest ones) seem to follow an innovative writing practice that might be related to a distinct spoken regional feature. It is important to bear in mind that the geographical distinctions made in the corpus (based on distinctive socio-political realities) do not represent areas in isolation. The landscape between core Mesopotamian areas was traversable and there was constant communication between the different regions. In fact, the main centres in the Diyala are very close indeed to one of the cities that provides more documentation for the northern region (Sippar). They are roughly located on opposite sides of

16 The distribution of data is further nuanced to a lesser degree by other factors, mainly chronology and the existence of a small group of lexemes (many of them loanwords) consistently exhibiting word-initial S-spellings. These lexemes might contain a different phonemic unit or maintain a contrastive feature that separates them from other lexemes with word-initial /s/ (Goetze, 1958; Streck, 2006; Kogan, 2011).

the outskirts of modern Bagdad. Indeed, the difference in the variable (s, z) (and other features) is attested in centres that were no more than 40 kilometres apart in some cases.

Whilst Figure 2 (above) showed the instances of word-initial and double /s/, where Z-spelling are predicted by the allophonic explanation, Figure 3 (below) presents forms with non-initial short /s/ in the corpus. This is the environment where /s/ is expected to be represented by S-signs in Old Babylonian.

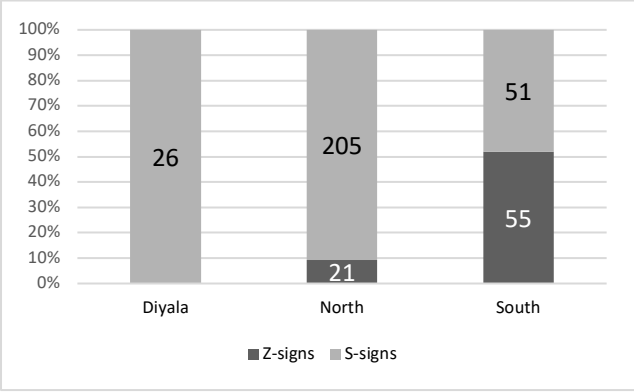

Figure 3. Instances of Z- and S-signs for contexts where S-signs would be expected by their phonological context (Hernáiz 2020).

The graph shows again that, quantitatively speaking, the corpus contains far more S-spellings than the alternative Z-signs, as expected. However, the southern-related letters show a distribution that is significantly different from the other two regions (Pearson's Chi-squared test data for independence: X-squared = 117.8, df = 2, p-value < 2.2e-16). The initial impression is that the southern group retains more Z-signs in this phonetic environment, placing it closer to previous Old Akkadian spelling practices.

It should be noted that the internal composition of each of the groups is not even: the chronology of southern-related texts is on average older than that of the bulk of norther-related texts, because it does not include 'late Old Babylonian' documents.[17] To expand the data from Hernáiz (2020) and minimise the potential effect of chronology on the distribution of variants, the same variable can be now analysed in a group of 219 southern OB letters published in George (2018).[18] These letters originate from the southern Old Babylonian city of Larsa or the surrounding areas under Larsa's control. They are dated to two different periods: 89 of them can be considered

17 There is a documentation gap in southern Mesopotamia following the political turmoil in the last third of the eighteenth century BCE (see e.g., Sallaberger, 1999, p. 4).

18 Texts n. 1 to 219 in (George 2018). The remaining letters from this publication (n. 220 and 221) have not been included in the analysis because they belong to a late OB period.

'early' Old Babylonian letters (predating the reign of Rim-Sin), but 130 belong to the 'middle' Old Babylonian period, primarily associated to the time of Rim-Sin (1822-1763 BCE) (George, 2018, p. x-xii). The data indicate that this new corpus supports the distinctively 'conservative' usage of Z- and S-signs to render /s/ in southern letters, compared to other core Mesopotamian areas. Importantly, this holds true not only for early Old Babylonian letters, but also for middle Old Babylonian letters, i.e., the best documented period in ACCOB, accounting for most of Diyala and northern-related texts in the corpus (Hernáiz, 2020).

To wit, Figure 4 shows the overwhelming occurrence of Z-signs in word-initial and double /s/ (where Z-spellings are indeed expected), for both early and middle OB southern texts in George (2018):

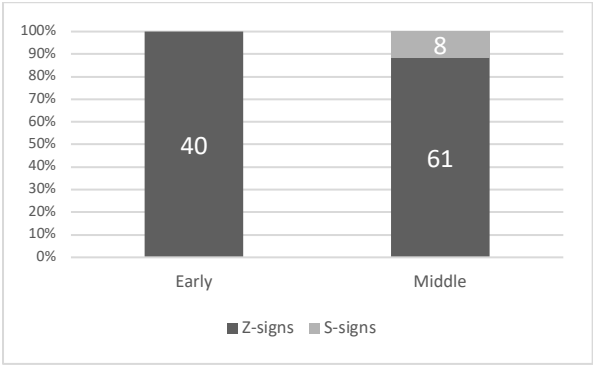

Figure 4. Instances of Z- and S-signs for contexts where Z-signs would be expected, in early and middle southern OB texts in George (2018).

Crucially, Figure 5 (below) shows that Z-signs are also prominent in non-initial short /s/, where S-spellings would be expected according to the 'allophonic pattern'. Significantly, this occurs in both early and middle OB texts:[19]

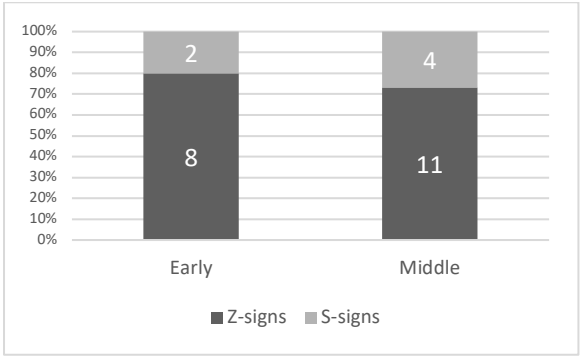

Figure 5. Instances of Z- and S-signs for contexts where S-signs would be expected, in early and middle southern OB texts in George (2018).

19 The data are given the Appendix.

These new data reinforce the observations in Hernáiz (2020), suggesting that the southern area exhibited a more 'conservative' approach in rendering /s/, as it retains, to a greater extent, the writing practice observed in earlier Old Akkadian records. This trend persists not only for earlier OB periods, but also throughout the more extensively documented middle phase of the Old Babylonian period.

Even though the variable analysed (variable (s, z)) probably has an ultimate phonological motivation —perhaps related to a general deaffrication process— the 'conservative'/ 'innovative' labelling used here inevitably refers to written language. Since there are no records of spoken Akkadian, we can only speculate about the relationship between the variation in written records and variation in spoken Old Babylonian lects. The distinct distribution of /s/-variants in the Diyala, northern and southern textual records respectively might be purely attributed to varying scribal traditions in different centres. Some of these centres might have been more conservative, but only at the orthographical level. While this remains a plausible explanation, it should be noted that other orthographic/linguistic variables do not match the conservatism or innovation trends associated with variable (s, z) in these areas. For example, although southern-related letters are more 'conservative' representing /s/, they are more 'innovative' in rendering nasalization of double stop consonants, a feature that will become prevalent in Middle Babylonian (Hernáiz, 2020, p. 267–278). They are also more 'innovative' than roughly contemporary texts from the Diyala and northern areas in the contraction of the pronominal form *šu'āti* (3SG.ACC/GEN) into *šâti* (Hernáiz in preparation). In sum, while diatopic differences in texts might be merely the product of more or less entrenched scribal orthographic traditions, a rigorous approach should not necessarily dismiss the possibility that said differences might perhaps reflect in fact some regional variation going beyond the written domain of language.

3. DISCUSSION: VARIATION AND CHANGE IN OLD BABYLONIAN

Despite the obvious limitations ultimately arising from the great distance between modern observers and the individuals who wrote Akkadian letters, the examination of the well-documented Old Babylonian material reveals significant types of variation permeating throughout the texts. Remarkably, this is evidenced to a considerable level of detail, given the time depth. Although more general accounts of dialectal or genre distinctions can be found in the record of languages that predate Old Babylonian by a few centuries, the higher resolution data in Old Babylonian corpora are particularly apt for historical sociolinguistic enquire.

Of course, these investigations do not meet far-fetched expectations about detailed questions on defined sociolects or the potential reasons why an individual would choose one variant or another from within their repertoire (or what a speaker's repertoire might encompass at a given time). But

the study of the relation between documented language and socio-historical settings is not fruitless. The fact that we have considerable documentation at our disposal for earlier and later Akkadian varieties is a valuable asset for analysing variation in the wider context of language change. In the case study concerning the representation of the phonemic unit /s/, diachrony plays a significant role in the distribution of variant spellings. Within Old Babylonian, the phonological context in which /s/ is embedded also predicts to a significant extent the different orthographic choices, strongly suggesting that the overall change in written texts ultimately responds to phonetic pressures on the spoken domain. However, the uneven adherence to this pattern in OB letters can also be positively associated with the geographical origin of the sender.

While the existence of different orthographic traditions —rooted in scribal education, and independent of immediate spoken forms— can indeed explain the synchronic-diatopic variation, its mere existence is still highly informative for the modern researcher. Importantly, the distribution of more or less innovative /s/-variants in Old Babylonian centres does not necessarily align with innovation in other variables. That is, one area might exhibit a preference for the /s/-variant that later becomes widespread in Middle Babylonian, while simultaneously retaining more conservative features which are no longer kept in other areas. This suggests that variation in writing might be linked, at least in part, to linguistic changes spreading unevenly, with certain regions adopting certain innovations like the /s/-variant early, while still maintaining retentions that have in turn evolved differently in other regions.

The study of other traits can illustrate further aspects of variation in Old Babylonian. The distribution of the form *šu'āti* illustrates how analysing variation can help make sense of the links between the linguistic and socio-historical context of the time. Letters issued by (or on behalf of) King Hammurabi of Babylon consistently exhibit the pronominal form *šu'āti* (3SG.ACC/GEN); at the same time, letters sent by the king's right-hand man in administrative matters display a mixture of *šu'āti* and *šâti,* its contracted counterpart (Hernáiz, in preparation). The letters from both senders have identical recipients and are about the same topics, levelling out any apparent diaphasic distinction. However, the variation between these letters, all sent from Babylon's central administration, becomes more relevant when an overview of the OB record shows the prominent use of *šu'āti* in Babylon's area and a preference for contracted forms in southern regions —precisely the place of origin of the king's official. The study of variation and change in Old Babylonian, therefore, not only helps us better understand the diatopic aspect of the linguistic landscape of the time, but also reveals traits that testify to the different nuances with which social actors presented themselves in written documents. Whether there was a difference in how the king and his official used the pronominal form (or how their respective scribes did) cannot be ascertained; however, we can see that the letters issued on their behalf would contain distinctive traits that would represent the senders' persona to the recipients of the missives. This is of interest for historical sociolinguistics as it relates to variation whereby a speaker's activity appears embedded in varied and changing social

contexts (Tuten; Tejedo-Herrero, 2011, p. 285–286). In cases like this, our knowledge about the individuals involved in the letter exchange is not far from complying with the requirements for sociolect delimitation expressed in Winter (1999, p. 75), whereby "text data have to be matched with findings about the text producers and users, about their specific group affiliations, and about their interaction among themselves and with others". Further research on morphosyntactic variation, such as the presence or absence of gender syncretism in the pronominal paradigm (Hernáiz, in preparation) can expand the study of variation beyond the limits of what can be categorised as purely 'spelling' practices, delving into morphosyntactic variables.

The richer perspective of languages of the past revealed by analyses of variation (and change) exemplified in this article cannot be reconstructed on the basis of comparative linguistics (unless a clear signal in daughter or related languages can be detected). Language reconstructions give us crucial information about undocumented languages, inferred from later documented corpora, but they can hardly go beyond generalizations and regularities; the subtleties of language variation can easily fly under the radar. This article illustrates the presence of an intricate distribution of variants within Old Babylonian textual corpora, implying the likelihood of variation occurring at some point in the spoken domain. While this broad community of speakers included various Old Babylonian socio-political centres, there is evidence of continuous population movement suggesting that each centre would have their own spectrum of linguistic diversity (Efrat-Kowalsky, 2022). Consequently, the very specific aspect of the general uniformitarian principle that assumes that language must have been variable finds support in the written records of languages spoken as far back as 4000 years before the present. Further research might advance our assessment of other uniformitarian expectations, such as linguistic differences related to distinctive social groups and gender, or individual awareness of these differences (Bergs, 2012, p. 96). Even though the textual data and our knowledge about socio-linguistic structures for such distant temporal coordinates is decidedly limited, the Old Babylonian written record stands as a testament to the existence of variation in a time distant enough be paired with prehistorical communities and uniformly reconstructed proto-languages in other parts of the world.

ADDITIONAL INFORMATION

CONFLICT OF INTEREST

The author declares no competing interests.

STATEMENT OF DATA AVAILABILTY

The author confirms that the data and materials supporting the findings of this study are available within the article and its supplementary materials.

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APPENDIX

List of instances of consonant-vowel syllabograms rendering /s/ in Old Babylonian letters in (George 2018):

N.	*token*	*text, line*	*period*	*sign*	*expected*
1	*ni-ik-ka-as-sà*	114, 14	Middle	Z	Z
2	*ʾdi ¹-ha-as-sà*	132, 10	Middle	Z	Z
3	*sà-ni-iq*	137, 31	Middle	Z	Z
4	*ni-ik-ka-sà-am*	137, 37	Middle	Z	Z
5	*sà-ar-ri-im*	137, 39	Middle	Z	Z
6	*a-na-sà-ha-ak-ku*	144, 16	Middle	Z	Z
7	*an-ni-sà*	151, 8	Middle	Z	Z
8	*an-ni-sà*	151, 8	Middle	Z	Z
9	*na-sà-[hi-i]m*	158, 5	Middle	Z	S-sign
10	*ni-ik-ka-as-sà-am*	162, 11	Middle	Z	Z
11	*[ni-ik-k]a-as-sà-am*	162, 15	Middle	Z	Z
12	*[r]i-ik-sà-ti*	181, 7	Middle	Z	Z
13	*wa-ra-sà*	191, 16	Middle	Z	Z
14	*sà-al-mi-im*	2, 20	Early	Z	Z
15	*ta-na-sà-ha*	2, 30	Early	Z	Z
16	*sà-sí-ia*	2, 31	Early	Z	Z
17	*ta-sà-la-ah*	204, 8'	Middle	Z	S-sign
18	*ta-sà-ʾla ¹-ah-ma*	204, 9'	Middle	Z	S-sign
19	*sà-ar-ra-am*	216, 29	Middle	Z	Z
20	*sà-ba-ki-im*	36, 38	Early	Z	Z
21	*ú-sà-ka-pu-ši-na-/ti*	41, 6	Early	Z	S-sign
22	*ka-sà-ap-ka*	52, 8	Early	Z	S-sign
23	*ṣí-di-sà*	64, 20	Early	Z	Z
24	*[x]-pa-ra-sà-am*	66, 29	Early	Z	S-sign
25	*sà-wa-ar*	69, 7	Early	Z	Z
26	*ka-sà-ap*	72, 5	Early	Z	S-sign
27	*ni-sà-la-ah-ma*	77, 20	Early	Z	S-sign
28	*sà-ah-li-i*	80, 7	Early	Z	Z
29	*sà-wa-ar*	86, 8	Early	Z	Z
30	*né-sà-a*	92, 7	Middle	Z	S-sign
31	*pu-ur-sà-am-ma*	93, 26	Middle	Z	S-sign
32	*sa-an-qí(!)-im*	123, 17	Middle	S-sign	Z
33	*mu-da-sa-a-am*	147, 42	Middle	S-sign	S-sign
34	*mu-da-[s]a-a-am*	147, 44	Middle	S-sign	S-sign
35	*sa-a-du-ú*	23, 7	Early	S-sign	S-sign
36	*ru-uk-sa-ni-ma*	87, 7	Early	S-sign	S-sign
37	*sa-ma-am*	95, 12	Middle	S-sign	Z

38	*sí-ka-a/-tim*	1,1	Early	Z	Z
39	*sí-ka-tim*	10,1	Early	Z	Z
40	*ku-us-sí-im*	100,22	Middle	Z	Z
41	*sí-ka-tim*	11,1	Early	Z	Z
42	*sí-sí-na-tim*	115,11	Middle	Z	Z
43	*sí-sí-na-tim*	115,11	Middle	Z	Z
44	*sí-sí-na-tim*	115,16	Middle	Z	Z
45	*sí-sí-na-tim*	115,16	Middle	Z	Z
46	*sí-sí-na-tim*	115,18	Middle	Z	Z
47	*sí-sí-na-tim*	115,18	Middle	Z	Z
48	*sí-kà-tim*	12,1	Early	Z	Z
49	*ni-sí-ir*	122,11	Middle	Z	Z
50	*ni-ka-sí-šu-nu*	127, 23	Middle	Z	Z
51	*sí-ip-hi-im*	129,3'	Middle	Z	Z
52	*sí-kà-tim*	13,1	Early	Z	Z
53	*pi-sí-il-ti-im*	13,8	Early	Z	S-sign
54	*sí-ka-* ˹*tim*˺	14,1	Early	Z	Z
55	*sí-ni-iš-ta-am*	14,22	Early	Z	Z
56	*sí-kà-tim*	15,1	Early	Z	Z
57	*sí-kà-/tim*	16,1	Early	Z	Z
58	*sí-ni-iš-tám*	16,8	Early	Z	Z
59	*ni-ik-ka-as-sí-im*	162,6	Middle	Z	Z
60	*ši-pa-as-sí*	169,3'	Middle	Z	Z
61	*sí-ik-ka-/ti-im*	17,2	Early	Z	Z
62	*sí-ka-ti-/im*	18,2	Early	Z	Z
63	*sí-ra-ši-im*	186, 11	Middle	Z	Z
64	*sí-* ˹*ra-ši*˺*-im(!)*	186, 7	Middle	Z	Z
65	*sí-ma-né-e-em*	189,17	Middle	Z	Z
66	*sí-ik-ka-ti-/im*	19,2	Early	Z	Z
67	*sà-sí-ia*	2, 31	Early	Z	Z
68	*sí-kà-tim*	2,1	Early	Z	Z
69	˹*bi-it*˺*-a-sí-i*	205,12	Middle	Z	Z
70	*pu-ru-us-sí*	214,17	Middle	Z	Z
71	*sí-kà-tim*	3,1	Early	Z	Z
72	*sí-ka-tim*	31,12	Early	Z	Z
73	*sí-kà-tim*	5,1	Early	Z	Z
74	*[wa]-ar-ki-sí-/na*	55,12	Early	Z	Z
75	*sí-k[a-ti]m*	6, 1	Early	Z	Z
76	*sí-in-qá-ni-/iš-šu-ma*	64,27	Early	Z	Z
77	*sí-kà-tim*	7,1	Early	Z	Z
78	*ni-ka-as-sí*	78,12	Early	Z	Z

79	*sí-ka-a-tim*	8,1	Early	Z	Z
80	*ši-ta-sí-i-ma*	86,20	Early	Z	S-sign
81	*sí-ka-a-tim*	9,1	Early	Z	Z
82	*ši-pa-as-sí-ku-nu*	90,12	Middle	Z	Z
83	*di(!)-sí-tu-ʿuh ²-ha*	95, 12	Middle	Z	S-sign
84	*sí-ra-ši-i*	95,6	Middle	Z	Z
85	*sí-ra-ši-am*	95,9	Middle	Z	Z
86	*[e]-sí-ih-ku-um*	96, 9	Middle	Z	S-sign
87	*ta-ša-às-si-ma*	96,11	Middle	S-sign	Z
88	*si-tam*	144,19	Middle	S-sign	Z
89	*si-it-tam*	180,30	Middle	S-sign	Z
90	*ši-si-šu-nu-ti-ma*	205, 11	Middle	S-sign	S-sign
91	*si-it-tim*	215, 19	Middle	S-sign	Z
92	*ta-ša-ás-si*	128,16	Middle	S-sign	Z
93	*iš-ta-a-si*	215,27	Middle	S-sign	S-sign
94	*sé-ek-ke-ri-šu*	119,9	Middle	Z	Z
95	*a-ha-sú-nu*	100,12	Middle	Z	Z
96	*li-sú-ku-uš*	103,10	Middle	Z	Z
97	*ta-sú-uq*	103,4	Middle	Z	Z
98	*ṣi-bu-ut-sú-nu*	104,12	Middle	Z	Z
99	*É-sú*	104,20	Middle	Z	Z
100	*É-sú*	104,24	Middle	Z	Z
101	*É-sú*	104,27	Middle	Z	Z
102	*[li]-sú-hu-šu-ʿú-ma ¹*	105,21	Middle	Z	Z
103	*ʿša ²-ra-sú-[n]u-ʿú ¹*	105,7	Middle	Z	Z
104	*ʿa ²-ha-sú-nu*	113,6	Middle	Z	Z
105	*ṣí-ba-as-sú*	119,5'	Middle	Z	Z
106	*ʿki-sú(!) ²-um*	122,16	Middle	Z	S-sign
107	*aṣ-ba-at-ʿsú ¹*	147,24	Middle	Z	Z
108	*up-pu-sú-ti-ia*	147,44	Middle	Z	S-sign
109	*ri-qú-sú*	166,16	Middle	Z	Z
110	*šu-um-ri-sú-n[u-ti]*	169,4'	Middle	Z	Z
111	*er-sú-ú*	174,16	Middle	Z	S-sign
112	*a-ha-sú*	175,8	Middle	Z	Z
113	*er-sú-ú*	181,9	Middle	Z	S-sign
114	*ṣi-ba-as-[sú]*	185,11	Middle	Z	Z
115	*sú-ul-li-ma*	189,21	Middle	Z	Z
116	*bi-la-as-sú-nu*	193,28	Middle	Z	Z
117	*bi-sú*	199,10	Middle	Z	Z
118	*[a]s-sú-ur-ri*	201,38	Middle	Z	Z
119	*pa-sú-tim*	206, 18	Middle	Z	Z

120	*[ṣa-ba-a]s-sú*	214, 8	Middle	Z	Z
121	*sú-tim*	216, 29	Middle	Z	Z
122	*sú-⸢ú⸣-tam*	219,6	Middle	Z	Z
123	*as-sú-ku-um*	28,11	Early	Z	Z
124	*mi-ṭi-sú*	34,9	Early	Z	Z
125	*ni-pu-sú*	39,28	Early	Z	Z
126	*q]á-at-sú*	42,8	Early	Z	Z
127	*a-⸢ša⸣-sú*	54,9	Early	Z	Z
128	*a-sú-ri-ma*	55,18	Early	Z	Z
129	*er-sú*	72,11	Early	Z	S-sign
130	*e-bu-ra-as-sú*	91,6	Middle	Z	Z
131	*[wa]-ar-ka-as-sú*	93,25	Middle	Z	Z
132	*id-sú-nu-ti*	97,12	Middle	Z	Z
133	*a-sú-ri-i-ma*	20,20	Early	Z	Z
134	*i-ša-ás-su-ú-ma*	139,7	Middle	S-sign	Z