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Studies on linguistic and orthographic variation in Old Babylonian letters

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Zusammenfassung

Die vorliegende Dissertation untersucht, inwieweit eine Auswahl von schriftlichen Variationen in den altbabylonischen Briefen aus Mittelmeesopotamien signifikante linguistische Variablennutzen, die zeitlich-historische (diachronische), räumlich-geographische (diatopische) oder individuell-situative Heterogenität bezeichnen.

Gegenstand der Studie ist das Altbabylonische. Diese antike Sprache verkörpert durch den den großen Umfang der schriftlichen Aufzeichnungen eine weit verbreitete Praxis des Schreibens in einer signifikanten Reihe von Genres, einschließlich Skripte in Schreibschrift, die in einer Zeit der substanziellen geopolitischen Veränderungen ihre Hochzeit hatte.

Einige altbabylonische Dialekte, insbesondere aus den Randgebieten, wurden bereits im Detail identifiziert und beschrieben. Trotz früherer Versuche, breite sprachliche Dialektgebiete zu definieren, gibt es jedoch noch keine vollständige Beschreibung der paläographischen, orthographischen und sprachlichen Variabilität innerhalb des zentralmesopotamischen Gebietes.

Die vorliegende Untersuchung analysiert die dokumentierte Variation einer Reihe von orthographischen und sprachlichen Variablen, wie sie sich in einem zu diesem Zweck erstellten Korpus der alttbabylonischen Korrespondenz (ACCOB) manifestieren, der grammatikalische und außersprachlichen Annotationen zeitlicher, geographischer oder sozialer Merkmale der Produzenten oder Konsumenten der Briefe enthält.

Die Kombination aus einem quantitativen Ansatzes für die Verteilung der Variablen und einer Mikrostudie der Dokumente zeigt, dass trotz der Einschränkungen in der Art der außersprachlichen Informationen und der Beschränkungen eines Forschungsprojekts, das sich ausschließlich auf die Analyse der editierten Transskriptionen von Briefen konzentriert, eine Reihe von orthographischen und sprachlichen Merkmalen signifikant mit regionalen und / oder zeitlichen Koordinaten assoziierrt werden können,. Manchmal offenbart diese eine ineinandergreifende Multikausalität von Faktoren. Gleichzeitig muss die angebliche soziolinguistische oder diaphasische Salienz der Briefdokumente der zentralen königlichen Verwaltung unter dem Blickwinkel der heterogenen Landschaft der altbabylonischen Sprache neu definiert werden.

Die Ergebnisse der in der Studie analysierten Variablen sind eine differenzierte Beschreibung der altbabylonischen Sprache und ihrer orthographischen Praktiken, die als Grundlage für weitere Forschungen in diesem Gebiet dienen kann.

Abstract

This thesis interrogates the extent to which a range of written variation in the Old Babylonian letters from the central area of Mesopotamia relate significantly to variables denoting temporal-historical (diachronic), spatial-geographical (diatopic) or individual-situational heterogeneity. The object of the study is Old Babylonian, an ancient language whose large written record embodies a widespread practice of writing in a sizeable array of genres, including cursive and personal scripts, that flourished in a time of substantial geo-political changes.

Some dialectal varieties of Old Babylonian have been already identified and described in detail, particularly those of the peripheral areas. However, despite early attempts to define broad linguistic dialectal areas there is not yet a full description of, the palaeographic, orthographic and linguistic traits of variability within the central Mesopotamian area.

The present study analyses the documented variation of a set of orthographic and linguistic variables as they transpire in a corpus of Old Babylonian correspondence (ACCOB) created for that purpose, which contains grammatical as well as extralinguistic annotations of temporal, geographical or social characteristics of the producers or the consumers of the letters.

The combination of a quantitative approach to the distribution of variables and a micro-level study of the documents demonstrates that, despite limitations in the type of extra-linguistic information available and the restrictions of a research project focused solely on the analysis of edited transliterations of letters, a number of orthographic and linguistic features associate significantly to regional and/or temporal coordinates, sometimes revealing an intertwined multicausality of factors. On the other hand, the alleged sociolinguistic or diaphasic saliency of epistolary documents from the central royal administration needs to be redefined under the perspective of the heterogeneous landscape of the Old Babylonian language.

The findings for the variables analysed in the study present a more nuanced description of the Old Babylonian language and its orthographic practices that may serve as a basis for further research in the area.

Contents

List of abbreviations

AbB	Altbabylonische Briefe in Umschrift und Übersetzung
AfO	Archiv für Orientforschung
ABIM	Altbabylonische Briefe des Iraq Museums
ACC	accusative
ACCOB	Annotated Corpus of Correspondence in Old Babylonian
Ad	Ammi-ditana
AHw	Akkadisches Handwörterbuch
al	alii
As	Ammi-ṣaduqa
CAD	The Assyrian Dictionary of the Oriental Institute of the University of Chicago
CH	Codex Hammurabi
CV	consonant-vowel
CVC	consonant-vowel-consonant
GAG	Grundriss der Akkadischen Grammatik
GEN	genitive
GN	geographical name
Ha	Hammurabi
ID	identification (number)
JANES	Journal of the Ancient Near Eastern Society
JAOS	Journal of the American Oriental Society
JCS	Journal of Cuneiform Studies
l	line
MB	Middle Babylonian
n	number
NABU	Nouvelles assyriologiques brèves et utilitaires
NB	Neo-Babylonian
NOM	nominative
OA	Old Assyrian
OAkk	Old Akkadian
OB	Old Babylonian
OBL	oblique
OLZ	Orientalistische Literaturzeitung
PL	plural
PN	personal name
POSS	possessive
RA	Revue d'Assyriologie et d'Archéologie Orientale
RS	Rim-Sin
SG	singular
Sd	Samsu-ditana
Si	Samsu-iluna
Sin-mu	Sin-muballiṭ
Sum-ab	Sumu-abum
VC	vowel-consonant
vol	volume
ZA	Zeitschrift für Assyriologie und Vorderasiatische Archäologie

Notes on transcriptions and conventions

Following Assyriological convention, Akkadian terms are given in italics, Sumerian words and logograms in capital letters. The term transliteration refers to a sign-by-sign rendering of the cuneiform script. Transliteration of phonograms (i.e. graphical signs that represents a phoneme or combination of phonemes) are given in italics and connected by hyphens. References to the conventional designation of graphemes (irrespective of their multiple phonographic values), are also rendered by capital letters (e.g., DA). Likewise, sets of graphemes are also represented using an uppercase Latin character (e.g., S-signs).

Reference to a specific phonological representation of individual graphemes is given in italics, with the distinctive diacritics of the assyriological tradition (e.g., *pí* or u_4). Exception is made when, as it is usual in (historical)sociolinguistic research, the signs embody the nomenclature of a binary variable, in which case two or more signs are enclosed in parentheses and separated by comma(s) without spacing: e.g., variable (pi,pí)[1].

Phonemes are indicated between backslashes (e.g. /t/), and phonetic realizations are written between square brackets (e.g. [d͡z]). A further form of notation is occasionally employed in the study to facilitate the indication of the correspondence between potentially divergent phonological realizations that share an etymologically common source. To mark a phonemic abstraction that encompasses all the reconstructed equivalent phonemes and allophones from different periods or dialects of Akkadian that allegedly derive from a single phoneme, a conventional form of the phoneme is placed between vertical bars and marked with an asterisk. E.g., the notation |s*| represents both phonemes: /t͡s/ in Old Akkadian (OAkk) and (partially) Old Babylonian (OB); and /s/ in Middle Babylonian (MB) and (partially) OB.

With the exclusion of *ḫ* (transcribed *h* in the study), specific signs from traditional notation in assyriolgical scholarship that differ from the notational standard of the International Phonetic Alphabet, such as *š*, *ṣ* or *ṭ*, are used throughout the thesis for the sake of convenience. The rationale behind this decision is grounded on the fact that although these characters are phonetically vague, the original articulation(s) represented by them cannot be reconstructed with complete certainty. On the other hand, the employment of these characters in phonetic and phonological notations, although it might be an obstacle to cross-linguistic comparisons, has the advantage of not committing to rendering one specific phonetic articulation (which is difficult to ascertain), and on a secondary level, it conforms to conventional transcribing traditions in Assyriology and comparative Semitic studies.

The rendering of ancient personal names follows conventions used in the online archive of Old Babylonian texts Archibab[2], without notation of diacritics (e.g. Rim-Sin)[3].

Unless otherwise noted, the clause ‘OB letters’ is used to refer to Old Babylonian letters from the core Mesopotamian area, the object of study, to the exclusion of Old Babylonian correspondence from peripheral areas such as Mari or Susa.

[1] Tagliamonte 2006, 70 ff.
[2] http://www.archibab.fr/ [accessed 01.07.2017].
[3] Cf. Rīm-Sîn.

1. INTRODUCTION

Among the languages of the ancient world whose written record has been preserved until modern times, Old Babylonian occupies a significant place as a potential object of linguistic research. The term Old Babylonian refers to a temporally and geographically-bound stage of the historical dialect continuum of East Semitic, conventionally labelled with the umbrella term 'Akkadian' (from the autoglottonym *akkadûm*), and covers roughly the central and southern areas of Mesopotamia during the first half of the second millennium B.C.E. The modern need to categorize into different chronological stages the history of Akkadian led scholars to name this period and its political and socio-cultural characteristics, including the language, after the city of Babylon, the political centre of the area for a considerable part of the period prominent in the collective memory of later periods due to the geopolitical and cultural impact in the region of the rulership of the Babylonian king, Hammurabi. However, the political and cultural structures of the Old Babylonian period experienced abrupt and fundamental changes. As a matter of fact, the city of Babylon did not acquire high regional relevance until the reign of Hammurabi in the XVIII century B.C.E.[4], while previous political fragmentation characterised a long phase where other regional centres underwent differing stages of interdependency and autonomy.

Old Babylonian, however, stands out among other sources of linguistic data for ancient languages because of the amount and type of written material attested, which resulted from what has been described as 'a revolution in writing' that involved a 'broad array of changes in the form, function and social location of writing'[5]. According to N. Veldhuis,

> In comparison with Ur III practices, the Old Babylonian innovations in the writing system include changes in the style of writing (semi-monumental versus cursive), the language of writing (Sumerian versus Akkadian), the uses of writing (official versus private), the teaching of writing (informal versus formal), and the format of some key text types (linear enumeration versus table). (Veldhuis 2012, 11).

In contrast to other ancient languages, the extensive use of writing in the Old Babylonian period is not restricted to official and stereotyped registers, but it also blooms with personal texts, documents written in a rapid 'cursive' style of penmanship, and scribal centres located in decentralised regions.
Moreover, recent studies on literacy in OB such as Wilcke 2000 and Charpin 2004, 2010 and 2016, have presented arguments that challenge the widespread assumption that literacy was highly restricted to a minority elite of scribes[6], suggesting that the ability to read and even write certain types of documents was not exclusively a matter of professional specialists.

The question arises as to whether the variety of text types, styles, authorship, and geopolitical centres of issuance correlate with heterogeneity in the orthography and in the lectal domain reflected in the written record.

[4] Charpin 2012.
[5] Veldhuis 2012, 3.
[6] See, e.g., Pearce 1995, 2265.

1.1 Variation in Old Babylonian

Scribal variation is a phenomenon that is not evenly attested in historical languages and it depends on a complex number of sociolinguistic, historical and cultural factors. Middle English, for example, is a language regarded as particularly interesting for the study of scribal variation due to the amount of surviving written evidence, which includes a variety of genres, but also for historical reasons and to the lack of national or regional norms, making Middle English a highly variable written record.

According to A. Westenholz a similar situation can be described for Old Babylonian:

> Old Babylonian Akkadian was evidently a language in lively development between 1900 and 1600 B.C., without any fixed written norm. The closest parallels are with Old High German between 800 and 1100 A.D., or medieval Italian, in both of which we see clear strivings for a supradialectal koine as well as deeply ingrained scribal habits and conventions. Yet chronological developments as well as pronounced dialectal variation can easily be discerned in the indomitable written language. The situation reflected in the Old Babylonian texts was undoubtedly similar. (Westenholz 2006, 253).

However, the extent and significance of variability in the OB language and its reflection in the written record are not evenly measured and considered in scholarship. While the existence of OB dialectal forms and idiosyncratic orthographies are widely acknowledged for certain peripheral centres such as Mari (see, e.g. Finet 1956) and Susa (Salonen 1962, de Meyer 1962), the core area of central and southern Mesopotamia, the main source of textual data for general descriptions of the OB language, is often presented as a fairly homogeneous linguistic region, with variation addressed on a secondary level:

> Although there was naturally some dialectal diversity among the wide geographical range of texts, on the whole the Old Babylonian corpus presents a remarkably uniform grammar. (Huehnergard 2011, xxvi).

> Dialektale Unterschiede im mittleren Altbab. zeigen sich vor allem zwischen Babylonien und Obermesopotamien (Mari, Tuttul, Rimāḫ und andere Fundorte) ab. [...] Unterschiede zwischen Süd- und Nordbabylonien werden in diesem Lehrbuch nur im Rahmen des Syllabars gennant. (Streck 2014, 5).

Moreover, the correlation between written variation and external variables that could be argued to indicate features of lectal distinctions, has been also firmly questioned by F. R. Kraus:

> Dialekte im herkömmlichen Sinne, also miteinander verwandte und einander ähnelnde Formen derselben Sprache, die bei meist geographisch und eventuell sozial geschiedenen Teilen der Sprachgemeinschaft im Gebrauche sind, können wir nämlich in Babylonien, welches die Hauptmassen unseres Schrifttums geliefert hat, nicht unterscheiden. Außerhalb Babyloniens kennen wir, abgesehen vom Altassyrischen, die altbabylonischen Dialekte von Mari und Susa. Die von den Assyriologen allgemein angenommenen Dialekte Babyloniens selbst jedoch, das sogenannte Nord- und das sogenannte Südbabylonischen, hat man noch niemals

> erfassen und beschreiben können, was sich wohl am deutlichsten darin äußert, daß sie im Gegensatze zum Altassyrischen in unseren Wörterbüchern nicht vorkommen. Was überall unter diesen Bezeichnungen angeführt wird, sind in Wirklichkeit eine Handvoll nicht zu deutlicher orthographischer Eigentümlichkeiten und das südbabylonisohe Wort *unnedukkum* für "Brief". [...] Der gegenwärtige Stand unseres Wissens erlaubt uns somit nichts anderes, als von der Gegebenheit einer allgemeinen altbabylonischen Sprache Babyloniens auszugehen. Von jeder vorgegebenen Einteilung der Sprache in objektive Komponenten, in Dialekte, ist abzusehen. (Kraus 1973, 33).

The distinctive northern and southern features of Old Babylonian referred to by R. F. Kraus were first outlined in an article from A. Goetze called 'The Akkadian dialects of the Old-Babylonian Mathematical texts', that despite being published in 1945 is still the most comprehensible study of core OB orthographic and linguistic traits related to regional variables. Its organised assembly of observations on a specific corpus of OB texts laid the foundations from which developed posterior reference works on orthography, and although the observations from Goetze (1945) have not been further systematized towards a general account of variation in Old Babylonian, some of the correlations between spelling forms and regional variables examined in Goetze 1945, such as the association of the spelling *pi* for /pi/ in southern Mesopotamia and *pí* in the North, are widely held as pertinent.

Despite important remarks on the scope and instability of Goetze's results[7] and whilst one of his most dedicated contributions, the distribution of sibilants (see also Goetze 1958), has been superseded by later findings about parallel internal phonological factors that can be held as explanatory for some of the variation in the representation of the phoneme /s/ in Akkadian (Faber 1985, Sommerfeld 1995), a renewed attention to lectal distinctions in OB has been proposed in the scholarship. The fruitful outcomes of analysing OB dialectal traits have been highlighted by observations on dialectal idiosyncrasies in the representation of /s/ in the Diyala region by W. Sommerfeld, who in response to Kraus' negative opinion on the evidence for OB dialects, comments:

> Troz dieser apodiktischen Aussage lassen sich Dialektunterschiede gleichwohl problemlos nachweisen. (Sommerfeld 2006, 371).

Nonetheless, the study on written variation in historical languages is not necessarily limited to the identification of distinctive geographical varieties or scribal traditions.

1.2 Language variation and change in historical texts

About half a century of sociolinguistic research on language variation has evidenced that the study of synchronic differences in linguistic variables can retrieve information about processes of language change. It is now widely accepted that all change involves variation, even though variation does not inevitably lead to change[8].

One of the pioneers in the study of language variation, W. Labov, observed that sound change develops from some units of a phonetic sub-system while other units remain

[7] See e.g. Streck 2006, 215 and Westenholz 2006, 253.
[8] Aitchison 2012, 13.

relatively constant. Therefore, although linguistic change can be regarded as regular, it is rather in the eventual outcome than in its inception or development.[9]

Changes can furthermore originate within a restricted subgroup of a speech community, which links variation with dialectology, and, according to Cheng and Wang (1975), they can operate through lexical diffusion.

The necessity of addressing variation in synchronic descriptions of languages is, nonetheless, a condition not always met by linguists and philologists, especially in works influenced by structuralist linguistics or generative grammar approaches. J. Aitchison considers that:

> in spite of the widespread early twentieth century attention to synchrony, most of the synchronic descriptions were inadequate. They were lacking in coverage in ways that impoverished both synchronic and diachronic studies. The omissions were of two main kinds. First, many synchronic linguists tried to ignore stylistic variation […] Second, the majority of linguists preferred to concentrate on clear-cut cases, ignoring any variation or fuzziness they encountered. In so doing, many of them unwittingly omitted the evidence needed to study changes in progress. (Aitchison 2012, 12).

The question that arises next is whether the same principles can be applied to ancient languages. A few years after the first impact of sociolinguistic research on the study of currently spoken languages, a similar approach to variation and change was adapted to focus on the analysis of written documents from historical languages. This developed a field, historical sociolinguistics, that combines synchronic and diachronic insights in order to 'provide an account of the forms and uses in which variation may manifest itself in a given community over time' (Romaine 1982, x). It is held by historical sociolinguists that, much like variation in speech, written variation may be expected to be a non-random, orderly and describable patterning, even if the intricacies of the paradigms that govern variation can be multivariate and complex**.** This approach to written texts, however, appears to be most revealing when the documents analysed respond to certain non-prescriptive principles:

> especially in a time of unsettled orthography, it is extremely likely that current sound-changes will be admitted into writing, whatever the historical origins of the writing conventions may be. (Milroy 1992, 142).

To this respect, the writing system that rendered the Old Babylonian language can be expected to provide informative cases of scribal variation which arguably could in some ways reflect, albeit partially, pronunciation characteristics of the language. W. Sommerfeld notes that:

> Das babylonisch-assyrische Keilschriftsystem hat (im Gegensatz zu den altorientlischen Buchstabenschriften) nicht den Abstraktionsprozeß geleistet, die sinnbildenden lautlichen Einheiten der Sprache -also die Phoneme- zu identifizieren und systematisch mit einem vollständigen Satz von differenzierenden Symbolen zu markieren.

[9] Ibid.

> Genausowenig hat der Abstraktionsprozeß stattgefunden, eine verbindliche Standardaussprache („citation form“) zur Grundlage der Verschriftung zu machen. Stattdessen wurde die gesprochene Sprache in ihrer Vielfalt verschriftet (Sommerfeld 2016, 374).

The study of language change actuation of historically attested languages is evidently constrained by the accidental nature of the written evidence and the scarcity of information about historical conditionings affecting the distribution of linguistic variables. Moreover, written language tends to be more conservative, normative and formal than oral language, and ‘variation across manuscripts may be due to either dialectal or other demographic/sociological differences or to stylistic differences across speakers or across time periods’[10]. Nonetheless, the systematic notation of variation in the description of languages and the reflection upon its relevance in the synchronic and chronologic dimension contribute to a more nuanced understanding of the sociolinguistic reality of present and past speech communities.

1.3 Motivation and scope of the research

Despite the major changes in the realm of writing and in socio-political structures proper of the OB period, the emphasis towards general or standard characteristics of the written record has pushed the attention to orthographic and linguistic diversity within the core Mesopotamian area onto a secondary level. The analysis of the set of variables examined in Goetze’s paper ‘The Akkadian dialects of the Old-Babylonian mathematical texts’ has not been further systematized nor replicated in further and potentially informative spheres of the OB documentation, in spite of Goetze’s suggestions to extend the research onto different corpora:

> It seems promising to ask whether the classification derived from business documents and letters is also applicable to the mathematical texts, and whether perhaps a study of them can furnish criteria for positing additional sub-classes. (Goetze 1945, 146).

On the other hand, the need for research on Old Babylonian variants has been repeatedly pointed out by scholars:

> Many good studies individual problems in Akkadian phonology have been made, but a systematic mapping of dialectal Old Babylonian is still a desideratum. (Westenholz 2006, 257).

> For the most part local and diachronic variants of vernacular Old Babylonian remain to be studied in detail. (George 2007, 46-47).

The advantages of a coherent description of regional variation in the written record are more tangible for the classification of documents that lack archaeological information:

> The primary goals are to determine the origin of tablets of unrecorded provenance, to establish their orthographic conventions, and to identify the literary tradition within which they stand. Unfortunately, such an attempt is hampered by the

[10] Hernández-Campoy and Schilling 2012, 68.

> embryonic state of our present knowledge, especially of Old Babylonian dialects. Likewise, we are largely unfamiliar with local orthographic traditions. Since the pioneering work of Goetze, there have only been phonological or morphological descriptions of separate archives as part of text publications. (Westenholz, J. 1997, 24).

The purpose of the present thesis, therefore, is to investigate the range of written variation in non-peripheral Old Babylonian as it manifests itself in a large collection of texts from the epistolary genre, in order to assess the range of variability of a selection of orthographic and linguistic features and their patterns of correlation with temporal-historical (diachronic), spatial-geographical (diatopic) or individual-situational variables.

The choice of letters as the object of research is based on several reasons. First, the large collection of OB extant manuscripts that belongs to this genre covers an ample spatial and temporal spectrum of the OB period and can also distinguish diverse situational and diastratic dimensions depending on the status of the sender, from royal correspondence to letters from a merchant's wife or school exercises. Second, there exists a ready availability of good editions of OB letters, particularly the fourteen-volume collection 'Altbabylonische Briefe in Umschrift und Übersetzung' (AbB), which offer an excellent and coherent base for study of a corpus of documents whose consistency is reassured by being 'one of the most studied text-groups in Assyriology'[11]. Third and foremost, correspondence documents (especially personal letters) are regarded as one of the most oral written genres, and consequently, 'more likely to foster linguistic innovation than typical written languages, such as legal and other official documents'[12]. On a detailed study on the linguistic characteristics of letters of the OB period, N. Veldhuis notes:

> letters were always written in Akkadian, using a style that is much less formalized or bureaucratic and more persuasive or rhetorical in nature than their Sumerian equivalents from the Ur III period. (Veldhuis 2012, 13).

W. Sallaberger, in his detailed study on textual characteristics of OB letters, although indicating the idiosyncrasy of the written language as different from the OB oral speech[13], also points out that:

> Briefe bilden damit unter den altorientalischen Texten eine einzigartige Quelle: nur in Briefe ist der Gebrauch der Sprache in alltäglicher Kommunikation in nennenswertem Umfang überliefert. (Sallaberger 1999, 2).

Ancient Mesopotamian epistolary documents, however, present crucial obstacles for the analysis of variation: the date of production of the text is very rarely annotated on the tablet, and they are documents that, by their own nature, involve relation to at least two different locations: the place of emission and the place of reception of the letters. The relative unreliability of geographical and chronological assets of epistolary documents sets the rationale behind proposals to focus the study of variation onto different text genres:

[11] Wasserman 2001, 637.
[12] Nevalainen and Raumolin-Brunberg 2003, 2.
[13] For a different approach to the traditional distinction between 'spoken language' and 'written language' in historical texts see Elspass 2012, 157.

> As I see it, we need a similarly good dialect grammar of Old Babylonian, primarily based on legal and administrative texts. Unlike the letters and the literary or scholarly texts (such as omen compendia or mathematical texts), they can usually be dated both in time and place. We even often know who wrote them. In this way, a description of the syllabary, the orthographic conventions, and the morphology in each of the major Old Babylonian centres could be made, and the chronological development could be monitored. That might then serve as a basis for dating the letters and the scholarly texts. (Westenholz 2006, 256-257).

The use of administrative texts, easily anchored to specific temporal and spatial coordinates, to study variation in OB would be an excellent contribution to our understanding of the regional and temporal scribal practices. On the other hand, the enormous advantage of the obtainable availability of extralinguistic information is counterbalanced by important constraints. First, the formulaic and stereotypical nature of its written data is more rigidly limited in linguistic content and is based on formulae that are presumably more inclined to reproducing fossilized expressions than to fostering linguistic innovations[14]. As D. Charpin notes:

> La rédaction de ce type de documents [contracts] suivait des formulaires souvent rigides, qui varient selon les traditions locales des scribes (Charpin 2004, 53).

While often repeated expressions, such as the formulae recurrently present in legal and administrative texts, can be more straightforwardly taught, practiced and learnt through scribal training, the language reflected by letters, while it also boasts a considerable amount of structures that were surely rehearsed and stereotyped[15], reflects nonetheless a richer expressive power and a more unmanageable scope of contents to be instructed[16].

Second, although administrative texts stem also from a variety of OB centres, they typically make used of a less phonographic script system. This is particularly true in southern Mesopotamian areas, where a great proportion of the linguistic data from administrative texts is rendered by sumerograms, making the availability of phonetic notation of Akkadian from southern documents insignificant in comparison to the northern areas.

The object of study of the present research project, therefore, focuses exclusively on the genre of epistolary documents, with the prospect that a parallel analysis of administrative and legal texts can produce a combined overall set of data that will be able to retro-feed and complement both corpora and provide a more robust appreciation of the scope of linguistic and orthographic variation and of the mechanisms of writing in the OB societies.

As further explained in chapter two, the method of research is the corpus-based quantitative and systematic account of the form of a series of orthographic and linguistic traits within a corpus of OB letters created for that purpose. The macro-analytical analysis of a large collection of texts allows for the extraction of significant characteristics based on quantitative data despite low-frequency inaccuracies in the classification or in the edition

[14] Cf. Charpin 2002.
[15] See Kraus 1959.
[16] It should be noticed that letters can differ in their degree of orality depending on their situation in the personal-formal continuum. Letters from the more formal pole might draw on discursive structures with 'highly organised discourse patterns and routines' (Elspass 2012, 158).

of the letters, minimizing in doing so the pitfalls of working with data from defectively documented sources. A further important contribution of the study resides in the fact that the saliency of determined elements is contrasted against both chronological and regional variables, with a decisive attention to relative proportions, rather than a simple cherry-picking of relevant tokens, in the hope of providing a more reliable picture of the statistical relevance of the variants.

The Annotated Corpus of Correspondence in Old Babylonian (ACCOB) contains a total of 1800 letters from diverse editorial sources, of which two thirds consists of letters transliterated and edited in the collection 'Altbabylonische Briefe in Umschrift und Übersetzung' (AbB). The main criteria for the inclusion of letters in the corpus is the availability of information that relates the text to broad extralinguistic parameters of date and geographical location. This information, however, is very uneven in its reliability and includes from archaeologically recorded data, geographical or regional hints provided by the content of the letters to secondary references in the assyriological literature that allude to epigraphic clues or to dated references to the individuals attested in the letters in administrative documents. The quantitative approach is further complemented by a micro-analysis of relevant elements of variation within sub-groups of letters from individual informants, or even within single texts.

The overriding aim of the research is to investigate the concept of central Mesopotamia dialectal area as largely homogeneous in the OB period by assessing the relevance of the range of divergence found in a number of variant traits, primarily observed in previous literature, and its association with regional, temporal or individual-situational variables.

This thesis is divided into two main research areas, conventionally separated in two parts: one section devoted to what has been labelled 'orthographic' variables, and two sections dedicated to variables more straightforwardly related to language variation. The complete structure is as follows:

Chapter 2: *Corpus and Methodology* presents a more extended explanation of the research guiding principles of the thesis, as well as a more detailed description of the analysis, composition and annotation of the corpus of OB letters ACCOB.

Chapter 3: *Orthographic variables in Old Babylonian letters* assess the distribution of a number of spelling variables in the corpus and their relation to external and internal textual conditionings and constraints.

Chapter 4: *Phonetic variables of Old Babylonian: Sibilants* explores a key feature of OB variation, the representation of the phoneme /s/ within the wide set of OB sibilant consonants and its chronological development.

Chapter 5: *Phonetic variables of Old Babylonian: Nasalization of voiced stop consonants* retrieves and analyses the short number occurrences in the corpus of the graphic rendering of the phonological phenomenon of nasalization of geminated obstruents, that becomes widespread in later stages of Akkadian.

Chapter 6: *Summary of findings and final conclusions* concludes the research by providing an abridged sketch of the combination of findings from chapters three, four and five.

In summary, this thesis seeks to utilise previously observed features of orthographic and linguistic variation in Old Babylonian as well as new data provided by a large corpus of

letters, to provide a systematic assessment of the heterogeneity of Old Babylonian scribal practices in the epistolary genre. The research will contribute new macro-analytical and numerical data, as well as significant observations from micro-analytical comparisons of individual informants, to the scholarly understanding of Old Babylonian lectal variation.

2. CORPUS AND METHODOLOGY

The methodology for the analysis of written variation in OB letters adopted in the present study combines a quantitative handling of data derived from techniques and principles of corpus linguistics and (historical)sociolinguistics with the analysis of information provided by philological and historical scholarship of the OB period and Semitic studies.

Corpus-based variation studies entail the use of objectively countable features[17], to provide a quantitative arrangement of extracted tokens onto which diverse analyses are carried out. Types of corpora range from reference collections of texts designed to investigate a given language as a whole, to specialised corpora designed to answer more specific research questions [18]. The corpus built for the present project, the Annotated Corpus of Correspondence in Old Babylonian (ACCOB), was designed to interrogate the range of written variation in Old Babylonian letters and its potential correlations with linguistic and extralinguistic variables. The corpus was, therefore, conceived as a representative sample of modern editions of epistolary documents and not as a compendium of the available material within that genre. The main criterion adopted to determine the texts that would constitute the corpus was the existence of either internal or external references that could associate epistolary texts to broad chronological or geographical coordinates. However, the small number of edited letters related to certain archaeological sites or periods implies that an ideally balanced corpus with a relatively homogeneous collection of temporal and regional sub-corpora would have been too scarce to retrieve quantitatively relevant outcomes. Therefore, as will be accounted for in the following examination of variables, while the corpus comprises texts stemming from a variety of OB locations and different periods, it should be borne in mind that most of the texts in the corpus relate to the XVIII century B.C.E. and to the northern areas around the sites of Sippar and Babylon.

ACCOB consists of a sample of 1800 letters sent by around 1000 senders, also called informants. The precise number of senders is tentative because it includes a large amount of letters in which the name of the sender has not been preserved. The issuers of these letters will be referred to as 'Unknown' in the study, although they are individuated and classified under distinctive identification numbers in the corpus. Allegedly different senders that carry the same personal name are further distinguished by a corpus personal ID number. It should be also noted that the number of texts linked to an individual informant vary greatly, with King Hammurabi represented by 213 documents in contrast to the majority of senders in the corpus, represented by less than ten letters.

The type of extralinguistic information associated to the texts is highly diverse and ranges from very reliable data, in the case of senders attested in dated documents or whose range and area of activities are fairly well known in the assyriological scholarship, to informants whose inclusion in a temporal or regional sub-category of the corpus relies on observations of a varied nature made by reputable scholars, including occasional references to epigraphic features. The main sources of this information are the observations and comments published in the editions or reviews of the letters (especially AbB) and from the digital archive online Archibab (http://www.archibab.fr/).

According to such information, the following temporal sub-categories have been conventionally established in the corpus:

[17] Cantos 2012, 103.
[18] Hunston 2008, 154.

- Early OB letters: texts associated to reigns prior to those of Rim-Sin of Larsa and Sin-muballiṭ of Babylon[19].
- Late OB letters: texts associated to the reigns following that of Samsu-iluna of Babylon.
- Middle OB letters: all the rest of the dated texts.

The dates given are in accord with the so-called middle chronology and depend on the conventional dating of the reign of Hammurabi at 1792-1750.

The relation between letters and geographical variables presents the most difficult conundrum in the classification of texts in the corpus. Not only are certain allusions to locations as related to the senders often tentative, even for tablets found in archives archaeologically documented, but other circumstances must also be considered. First, the place of emission and the place of reception of the letters are evidently different. The location where a letter was found is likely to correspond to the place of destination, though not even this premise can be relied upon. It appears that there exist letters in OB archives, perhaps drafts, that were never sent to their recipients[20]. Moreover, as suggested by W. F. Leemans for the letters of a merchant from Ur, traders might also have brought their letters with them when returning home after a long stay abroad[21]. Second, the place of emission of the letters does not necessarily correspond to the settlement site of the lower-level speech community from which the sender (or the scribe that issues the letter) belongs. In the current state of our knowledge, it is still unclear to what extent most letters were handwritten by their senders or by professional scribes. Even more bewildering are the potential effects of local traits on individuals that were settled in centres that are different from their original communities, and the subsequent question of whether the letters from such individuals would be produced by local scribes or by scribes that moved along with the sender from a common location.

Localization and mobility are therefore, factors that, for the most part of the corpus, escape our control. In the process of building the corpus, letters grouped by senders are further placed into geographical sub-categories. The classification criteria evaluate both the assumed place of origin/residence of the informants and the place(s) where they were active. For preliminary purposes of classification, whenever possible, informants are related to the area from where they originate, even if it is the case that some letters were issued from a different location. Letters in the corpus are also given a tentative stronger or weaker association to a location or a broad region according to the following premises:

1. Origin/first residence of writer and letter are assumed to be the same. (E.g. the letters from Hammurabi; strongly associated to the site of Babylon).
2. Origin/first residence of the writer probably differs from the place of emission of the letter.
3. No relevant information about the writer is found, but there is some evidence about the origin of the letter.

[19] Occasional reference to ‘archaic’ letters will be made regarding the chronological distinction among early OB texts from Ešnunna introduced by Whiting 1987.
[20] S. Charpin 2016.
[21] Leemans 1960, 53.

4. No relevant information about the writer or the place of dispatch of the letter is found, but there is some evidence about the place of recovery of the letter.
5. No relevant information about the writer or the place of dispatch of the letter is found, and only hints about place of emission or reception of the letter (weakest association sender-location in the classification).

It should be pointed out that, despite the multiple array of factors involved in the geographical sub-division of the textual record included in ACCOB, and the often tentative nature of the extralinguistic information, the picture emerging from the quantitative analysis of key variables in the study reveals a considerable level of homogeneity according to broad regional clusters, with less frequent, albeit conspicuously outlying, cases of intra-regional deviation.

The three main geographical divisions in which the corpus is segmented in ACCOB correspond to preliminarily assumed regional demarcations of dialectal areas in OB. According to Von Soden:

> Örtlich heben sich die Dialekte Nordbabyloniens, Südbabyloniens, des Osttigrislandes und Mesopotamiens (vor allem Mari) mit allerlei kleineren Verschiedenheiten heraus. (Von Soden 1995 [GAG §2d], 3).

Since the research project does not include peripheral Mesopotamian areas, only the three first regions mentioned by Von Soden are included in the corpus. The conventional designation of them in the thesis is as follows: North (corresponding to Von Soden's 'Nordbabylonien'), South (corresponding to Von Soden's 'Südbabylonien') and the Diyala region (corresponding to Von Soden's 'Osttigrisland').

Despite the focus on very general associations between the written data and broadly categorized external variables, care was taken to acknowledge the informative importance of individual internal variation and intra-archival and inter-archival divergence[22].

The present study relies on transliterations published in the main editions of the letters. Only some of the original tablets or copies have been collated for the present study, with minor emendations to published transliterations made. Therefore, one caveat for the computation of orthographic and linguistic data is the potential existence of transliteration mistakes in the editions of the letters, such as failing to notate the accent in the transliteration of a sign (e.g. ***pî***). However, even if the exact account of instances can vary after emendations from further collations of documents, it is foreseeable that the basic difference in quantitative terms provided by the overall picture would remain nonetheless relevant.

The orthographic and linguistic variables selected for research are explained in their respective sections. The concept of variable is widely used in (historical)sociolinguistic research. It refers to orthographic or linguistic items with identifiable variants: e.g. the phonetic cluster /pi/ is represented in OB by two different signs, i.e. variants: BI

[22] While some archives might consist of collections of letters written from surrounding areas near the destination site, or perhaps from further away but sent by scribes related to the place of reception others might include inter-regional communications with individuals of very different backgrounds.

(transliterated *pî*) and PI (transliterated *pi*). This heterogeneity is therefore referred to as 'variable (pi,pí)'.

The study of variables in the present work does not include textual data from personal names, names of deities or geographical names, due to their idiosyncratic orthography. S. J. Lieberman suggests:

> Personal names, for example, must be investigated as a separate problem, since they exhibit a peculiar orthography which is extremely conservative and uniform. […] The same may be said of place names and the names of the gods. (Lieberman 1976, 88-89)

He also adds:

> The fact that all of these were special parts of the curriculum resulted in their orthographies being even more strongly affected by the "force of tradition" than other parts of OB Akkadian texts. This is evident in their higher percentage of word graphemes, including frozen spellings, and the fact that certain syllable graphemes are used only in personal names, geographic names and divine names. (Lieberman 1976, 89, note 242)

The annexe at the end of the thesis provides the list of letters grouped by senders identified by name, ID number and general temporal and regional sub-categorization. Due to the lack of space, only the instances for the most relevant variants spellings for traits analysed in the study are listed in integrated tables. Large lists of occurrences of highly frequent variants, such as, for example, the occurrences of the very common phonogram *qá* (GA), have been also accounted for in the research database but not are comprised in the text of the thesis. All the data and correspondences used in the research can be replicated via examination of the inventory of letters and categorical sub-divisions provided in the annexe.

3. ORTHOGRAPHIC VARIABLES IN OLD BABYLONIAN LETTERS

3.1 Introduction

The present chapter examines orthographic variables in OB letters, i.e. those potentially distinctive ways to render in writing the OB language by using different graphic signs that can be regarded as idiosyncratic of the writing customs of a particular community or group of scribes. The most widely accepted orthographic differentiation in non-peripheral OB texts[23] is geographically-based, and establishes a general North-South division in the use of a small set of syllable-signs. The widespread assumption that a few syllabic graphic values occur mainly in texts from specific areas, e.g. in Southern Mesopotamia or in letters from Mari, is acknowledged in most studies about the Akkadian grammar and in Akkadian syllabaries, however, a general account of the distribution of orthographic features in central (i.e. non-peripheral) OB texts has not been accomplished yet. The most comprehensible study of OB orthographic variables related to regional variants is still an article published by Goetze in 1945, 'The Akkadian dialects of the Old-Babylonian Mathematical texts', whose systematic assembly of observations laid the foundations from which developed posterior reference works such as Von Soden and Röllig 'Das akkadische Syllabar'. In Goetze's article, 54 OB mathematical texts are compared and tentatively grouped as belonging to certain geographical settings. However, it is admitted that the object of the study, i.e. mathematical texts, might be 'apt to be stereotyped in their style' (Goetze 1945, 147), the reason why he encourages further studies on different textual genres:

> It seems promising to ask whether the classification derived from business documents and letters is also applicable to the mathematical texts, and whether perhaps a study on them can furnish criteria for positing additional sub-classes. (Goetze 1945, 146).

Nevertheless, we still lack a comprehensible view of orthographic features for most OB textual genres outside individual archives or peripheral areas, in Worthington's words:

> The knowledge which Assyriology possesses about Akkadian orthography and textual change is neither systematised nor efficiently pooled: with rare exceptions, [note 9: Goetze 1945. MW] insights achieved are not widely taken note of and reapplied to new sources, but left to languish in inconspicuous footnotes. In consequence, many opportunities for enhanced understanding are missed. (Worthington, 2012, 2-3).

The present research hopes to shed some light on the orthographic characteristics of one definite textual type, the OB written correspondence. For this purpose, orthographic data will be searched and retrieved from within a corpus of OB letters in order to analyse spelling variables, including those observed by Goetze (1945).

The orthographic survey is also understood as a necessary step before tacking further issues of linguistic variation in OB texts, inasmuch as it can identify trends and oddities in preliminary categorizations of letters into regional groups. It should be noted that the resort

[23] Non-central OB Mesopotamian sites present orthographic features that have been the object of many detailed studies (see e.g. Finet 1956 or Bottèro 1954 for OB texts from Mari). These areas are, however, not included in our present research.

to the term 'dialect' in Goetze's article reflects his belief that the use of distinctive sets of signs in OB mathematical texts could in fact represent an underlying distinction beyond strictly orthographic grounds, realising indeed articulatory divergence of OB sounds for different OB speaking areas.[24] The distinction between purely orthographic variation and phonologically-grounded variation for a historical language like Akkadian is indeed very difficult to ascertain. Like any natural language, we can expect that speakers of what has been defined as the Old Babylonian language must have enclosed diatopic, diachronic and diastratic differences that might or might not have been reflected in writing. At the same time, writing codifications have their own intrinsic conventions, therefore variation in the use of syllabic values can be closely related to extra-linguistic issues such as education and scribal traditions, text genres or even individual psycholinguistic phenomena. The present chapter will focus on a number of variables from OB letters considered to be less readily influenced by oral nuances, i.e. more orthographic in nature, whereas chapter four will analyse cases of variation regarded as more likely to be phonologically or otherwise linguistically motivated. It should be stressed, however, that the division between both study cases in two different chapters is more practical than categorical, and responds to different degrees of evidence implying that variation in writing was based on linguistic diversity rather than on purely transmitted orthographic usages, or vice versa. This means that, while the variables selected in chapter four arguably relate to more or less contemporary linguistic variation, the variables in the present chapter cannot, in the current state of our knowledge, be safely proved to be the graphic aftermath of oral diversity, being rather regarded as the result of a selection of signs from a repertoire, in accord to culturally- or regionally-bound writing traditions.

As noted before, orthographic features can provide important information about the texts, the people and the society in which writing took place. Worthington 2012 points out the:

> potential in spellings as sources of information about all sorts of things. (Worthington, 2012, vii).

One interesting aspect of the present attempt to assess the relation between orthographic features and other variables is that it can give us important clues for anchoring some documents to a more precise geographical or chronological background. Orthography is indeed one of the most important types of evidence used by scholars to infer the origin and chronology of many ancient and modern texts, alongside prosopographic, formulaic, or palaeographic evidence[25]. It is however less straightforward whether other types of texts can also potentially use the data from our study to provide comparisons and suggest similar classifications in terms of geographical or chronological origin of the texts. Text genres in which copy and transmission of earlier manuscripts are more prominent present the additional problem of defining the extent to which the orthography of a document is motivated by the writing conventions used by the scribe of the document or else by conventions from the scribe of a previous model text that perhaps belonged to a different scribal background. George (2009), while discussing the occurrence of northern orthographic features in the Song of Praise of Ningišzida (a composition whose geographical context is the far South), warns that:

[24] See e.g., in Goetze 1945, 148, note 354 how the assignment of one text into a group is said to be due to '**linguistic** reasons' [emphasis added]. See also Goetze 1945, 146, note 346 for a suggestion about potential phonological reasons behind the variable (*pi*, *pî*).
[25] See e.g. Lieberman 1976, 86.

> It is also the case that the distribution of "northern" v. "southern" orthography in manuscripts of literary texts is not properly understood. Spellings identified in such terms may not be indicative exclusively of geographical origin. (George 2009, 43).

The present study is, however, limited to the assessment of orthographic variables in OB letters. Although many comments made by the editors of the OB letters are accounted for, no attempt for a systematic epigraphic or prosopographic analysis of the letters has been carried out, and the data collected relies entirely on existing editions of letters. It is clear that the results of research in just one of areas of study mentioned above, namely orthography, should ideally be tabulated with every other information available from neighbouring fields of study, such as palaeography or analysis of social networks, in order to provide more reliable and comprehensible conclusions.

3.2 Old Babylonian orthographic variation in previous literature

3.2.1 General views on OB orthography

Some orthographic/linguistic variables of Old Babylonian texts have been the object of detailed studies, e.g. the representation of sibilants (see chapter 4) or the so-called 'plene writing' of vowels (Aro 1953); furthermore, many footnote references for a small number of isolated orthographic features, particularly southern spellings, proliferate in editions or comments of OB documents. One example of a concise compilation of OB distinctive regional features in OB letters is offered by Veenhof in the introduction to AbB 14[26]:

> Additional clues for their origin are some lexical data, notably the use in the south of *unnedukkum* instead of *ṭuppum*, certain phonetic features (e.g. the contraction of *ia*, especially in pronominal suffixes), and differences in the use of cuneiform signs, such WA (in the south also for *pi*), HI = *ṭà* in the north, DU = *ṭù* in the south, and TU = *ṭú* in the north, etc. As has been repeatedly noted such distinctions are rather basic and "in the south/north" often is too general to be helpful. (Veenhof 2005 [AbB 14], xiii).

Reference works on Akkadian graphemics such as Borger (2004) and Von Soden and Röllig (1991), whilst not devoted to establishing regional orthographic differences for each period of Akkadian, nonetheless label a small number of graphic values with general geographic rubrics (e.g. North, South, Mari or Elam), and dedicate short explanations for the description of the distribution of orthographic variables of different periods of Akkadian. Von Soden and Röllig's orthographic description of variation in non-peripheral OB[27] summarizes:

> Örtliche Unterschiede sind zwischen Nord- und Südbabylonien zu beobachten [note 1: Vgl. A. Goetze 1945, WvS and WR]. In Norden gibt man die emphatischen Konsonanten *ṭ* und *q* vor *i* und *u* vorzugsweise mit den für die Tenues *t* und *k* verwendeten Zeichen wieder, während man im Süden die für *d* und *g* gebrauchten bevorzugt. Die Neuerung, den Stimmabsatz ' mit dem *h*-haltigen Zeichen wiederzugeben, war anscheinend dem Norden eigentümlich, während der Gebrauch des Zeichens PI für *pi* (anstatt *pî*) wohl auf den Süden beschränkt war. Weitere

[26] Other similar accounts are common in the Akkadian literature, see e.g. Westenholz 1997, 60.
[27] That is, in core central Mesopotamian area, with the exclusion of 'peripheral' regions such as Mari or Elam.

> Unterschiede, u.U. auch zwischen den einzelnen Städten, warden bei genauerer Untersuchung gewiss noch sichtbar werden. (Von Soden and Röllig 1991, xxxi) .

The work continues with several further observations about features from Mari, a region that does not fall within the scope of the present study. For texts from the core territory of central Mesopotamia, Von Soden and Röllig's description of orthographic idiosyncrasies consist of ex cathedra accounts of preferences for some signs in northern or southern documents, as summarized in Table 1:

Table 1: Orthographic features from northern and southern OB texts after Von Soden and Röllig 1991

Typical Northern OB features	**Typical Southern OB features**
ṭì (TI), *ṭú* (TU)	*ṭi* (DI), *ṭù* (DU)
qí (KI), *qú* (KU)	*qì* (GI), *qù* (GU)
h-signs for /'/	
	pi

Except for the sign *pi*, which is said to be a spelling restricted to southern Mesopotamian texts, the other orthographic features from Table 1 represent in Von Soden and Röllig's opinion only a regional preference, and no further qualitative or quantitative detail about the relation between variables and geographic or textual domains is given. It is left unexplained, for example, whether the northern variant sign *pí* occurs alongside *pi* in southern texts or to what extend both signs might overlap.

3.2.2 Goetze: The Akkadian Dialects of the Old-Babylonian Mathematical Texts

The most exhaustive and comprehensive attempt to establish an orthographical characterization of OB texts based on geographical variables, which is incidentally given as a reference also by Von Soden and Röllig (1991)[28], is Goetze's study: 'The Akkadian Dialects of the Old-Babylonian Mathematical Texts' [29] . In this pioneering article (complemented by a later paper on sibilants[30]), Goetze makes a hypothetical initial division of the bulk of OB texts (other than the mathematical texts) into two groups: northern and southern documents, which are characterised by distinctive features in spelling, grammar and lexicon. According to this division, the northern and southern groups would include the following texts:

> 'Northern': Codex of Hammurabi, royal letters, texts from Dilbat and Sippar.
> 'Southern': chiefly texts from Larsa[31].

Goetze acknowledges that other texts that do not fit clearly into this primary division would need further labelling:

> It goes without saying that texts from other places will probably necessitate the positing of additional "dialects" (Goetze 1945, 146).

[28] Von Soden and Röllig 1991, xxxi, note 1.
[29] Goetze 1945.
[30] Goetze 1958.
[31] Goetze 1945, 146.

Thereafter, the article presents nine groups of orthographic and linguistic variables that, according to Goetze, characterise the 'two main Old Babylonian dialects' insofar as they have a bearing on the mathematical tablets[32]. Table 2 shows these features and the proposed links to northern or southern areas (variables 2, 3 and 8, will be explained and analysed in chapter four and five).

Table 2: Characteristics of the two main OB 'dialects' in Goetze 1945, 146-147

1.	Emphatic stops. Northern texts present T-signs to render emphatic dental syllables: *ṭá*, *ṭe₄*, *ṭì*, *ṭú* (TA, TE, TI, TU). Southern texts use D-signs: *ṭa*, *ṭi*, *ṭù* (DA, DI, DU).
2.	Syllable beginning sibilants (see chapter four).
3.	Syllable ending sibilants (see chapter four).
4.	Labials. Northern texts lack graphic distinction for voiced and voiceless labial clusters, except for the pair BA-PA: *ba*, *pa*. Southern texts, on the other hand, represent graphically not only the distinction of the pair BA-PA, but also that of the pair BI-PI. In other words, the representation of the segments /pi/ and /bi/ in northern texts is made by the same sign BI (*bi*/*pí*), whereas in southern texts a different sign, PI, is added to render /pi/ (*pi*).
5.	Writing of the sequence /aya/. Northern texts: *a-ia*. Southern texts *a-a*.
6.	Long vowels. According to Goetze, the Code of Hammurabi and 'good' northern texts[33] are characterized by the insertion of vowel signs in cases of 'Schleifton' (length originating either from vowel contraction or from a change in intonation), but do not mark other types of vowel length. Conversely, southern texts exhibit vowel signs 'where neither contraction nor grammatical change of intonation can be made responsible for their presence'.
7.	Phonetic complements. Northern texts prefer VC as complement syllabograms. Southern texts prefer CVC signs whenever available.
8.	Nasalization of double voiced stops (see chapter five).
9.	Possessive suffix attached to the infinitive. In the construction: DUB *anniam ina amār-im*/*-ika* 'on seeing this my tablet'.

[32] Goetze 1945, 146.
[33] Goetze does not provide any definition for what he considers 'good' texts.

Following the list of variables, Goetze divides the OB mathematical texts into six geographically differentiated groups in order to analyse the behaviour of these variables according to their regional distribution. It should be emphasized, however, that for many of the mathematical documents, the geographical information does not come from archaeological records, and it is instead the observation of formal similarities of the tablets (e.g. the appearance of the tablet or the employment of identical formulae[34]) that is used as the primary criterion of classification[35]. Thus, the categorization of the texts into six differentiated groups is often based on external appearance, content and terminology, and only in some cases relies on proper archival or geographical information. Table 3 shows the six divisions related to Mesopotamian sites in which OB mathematical texts were tentatively included:

Table 3: Groups of OB mathematical texts after Goetze 1945

N.	Proposed origin	N of texts	Details about classification	Prominent features
1	Larsa	11	One of the texts: 'Larsa well attested as a place of provenience'[36]. The rest of the texts are connected by formulaic similitudes. Two are conjectural, and two have 'the appearance of Larsa tablets of the time of Rīm-Sin'[37].	Signs *pe, pi, ṭa, ṭi*. Vowel signs for length. CVC-sign in phonetic complement. Nasalization of double stop consonant.
2	'southern'	5	Two of the texts clearly related by 'external appearance' and lot. Another document classified here only by 'linguistic reasons'[38].	Sign *pe*. Vowel signs for length ('sparingly').
3	Uruk	14	Most tablets included by lot information and 'further confirmation come from content and their terminology'[39].	Signs *ṭa, pé.* S-signs. Nasalization of double stop consonant.

[34] Goetze 1945, 147, note 353.
[35] Goetze acknowledges the conjectural nature of the appurtenance of some documents to a group. Regarding e.g. document BM 13901, he admits that classifications based on linguistic similarities might not be sufficiently reliable: 'I should have preferred other than linguistic reasons if there were any; as it is, the argument presented may be regarded as circular'. (Goetze 1945, 148, note 354).
[36] Goetze 1945, 147, note 353.
[37] Ibid.
[38] Ibid., 148, note 354.
[39] Ibid., 149, note 356.

4	Uruk	14	One text reported form Larsa by the 'dealer': 'Too much reliance cannot be placed on such information'[40]. At least 3 texts linked to the group by their phraseology.	Signs *pi*, (but *pé*). Lack of marking for vowel length.
5	'northern'	3	No information apart from the statement: 'The employment of BI for *pi* and the occurrence of SU make this a northern group'[41].	Signs *pí* and *pé*.
6	Sippar? 'Northern modernizations of southern originals'[42]	7	One text said to be purchased in Abu Habba.	Signs *pí*, *pé*, *ṭú*, *ṭe*$_{4.}$ Some long vowel marking. VC-sign complement.

According to the Goetze distribution, groups one to four stem from southern settings while group number five is originally from northern Mesopotamia. The last set of texts in the list, group number six, despite its alleged relation to the northern site of Sippar, is said to combine 'northern and southern characteristics'[43]. This is explained by Goetze by pointing to the southern origin of Akkadian mathematics, from which one could deduce that a northern reinterpretation thereof could still reflect original southern features while adding northern traits to the composition. However, there is no further explanation about what features from the sixth group are to be considered southern (or northern).

It should be noted that, despite the attempt to provide textually-driven evidence for the relation between orthographic/linguistic variables and regional OB dialects, Goetze's analysis faces two major obstacles:

- First, some of the general conclusions of the article cannot be safely drawn from the data provided; the scarcity of instances for many of the variables and the generalizations made on the basis of isolated examples of features are hardly relevant from a quantitative perspective, even though they might build on other observations gathered by the author but not explicitly presented in the article. For example, the employment of the sign BI to render /pe/ is argued to be a defining characteristic of the documents included in group three (localized in the city of Uruk), however, the supporting evidence in the article's data for such a taxonomic claim consists of merely one single instance of the spelling *pé* (BI)[44].

- Second, the criteria for the mapping of features into tentative geographical divisions, rather than having a base on reliable extra-textual evidence, are often extrapolated from expectations not overtly justified in the article. For example, in the explanation for the classification of texts into the 'northern' group five, there is

[40] Ibid., 150, note 360.
[41] Goetze 1945, 150.
[42] Ibid., 151.
[43] Ibid.
[44] VAT 7620: 4. Goetze 1945, 149.

no mention to archaeological or archival information. Instead, the affiliation seems to respond to aprioristic observations on the nature of orthographical and linguistic distinctions between northern and southern OB texts, not explicitly documented in the paper:

> The employment of BI for *pi* and the occurrence of SU make this a northern group. (Goetze 1945, 150).

Despite this conclusion, only one instance of *pí* (sign BI) and *su* (sign SU) appear in the texts from group five. Moreover, none of the documents from that group are unequivocally demonstrated, by archaeological means or otherwise, to stem from a northern Mesopotamian location, which makes Goetze's statement difficult to accept without further evidence.

An additional problem in the data, that has likewise weakened the impact of the overarching conclusions of the article, is the lack of explanation for the cases of overlapping occurrences of two variants of the same variable in texts from within one group or even within one single document, such as e.g., the presence of signs *pé* (BI) and *pe* (PI) in group four[45]. Internal variation of this type does not necessarily contradict Goetze's conclusions, but given the lack of a clear quantitative report of the cases of variation, concerns about the consistency and reliability of the data might consequently arise, as it is pointed out in a later account of orthographic variation in OB: Lieberman 1976.

3.2.3 Lieberman: Akkadian Orthographies

More than thirty years after the publication of Goetze's analysis of OB dialectal features, we find in Lieberman 1976: "The Sumerian Loanwords in Old-Babylonian Akkadian"[46], a detailed description of the Old Babylonian spelling practises in relation to regional variables. As the name of the book shows, this is a study of Sumerian loanwords in OB. Nonetheless, the work contains two sections, 'Grid of Akkadian Orthographies'[47] and 'Systems of Transliteration of Akkadian'[48], devoted to (1) reviewing the methods of assigning OB texts to geographical areas based, among other data, on orthographic idiosyncrasies, and (2) presenting in a comprehensible manner the repertoire of syllabograms characteristic of the writings from different OB regions. While Lieberman, unlike Goetze, describes straightforwardly this variation as 'orthographic', he follows the general scheme proposed by Goetze (1945), which is described as 'generally correct'[49], and is taken as an outline of the basic orthographic differences between areas in the Old Babylonian period.[50] However, Lieberman highlights the fact that the patterns in Goetze 1945 are 'only true in general':

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[45] For critical reviews of the studies about variation in sibilants in Goetze 1945 and Goetze 1958 see i.a. Streck 2006 and Westenholz 2006. These variables will be analysed in detail in chapter four.
[46] Lieberman 1976, 86-121.
[47] Ibid., 86-91.
[48] Ibid., 96-121.
[49] Ibid., 88: 'Nonetheless, the scheme expounded by Goetze is generally correct. It allows one properly to assign most texts to Northern and Southern Babylonian and fits the evidence as a whole'.
[50] Ibid., 87: 'Goetze has sketched in broad outline the basic orthographic differences between areas which used the cuneiform system of writing during the Old-Babylonian period. This allows one to distinguish between those texts written in Northern Babylonia and those written in the South, purely on the basis of orthography'.

> Even limiting ourselves to cases in which individual documents employ graphemes proper to both the Northern and Southern varieties yields many contradictions to Goetze's scheme. (Lieberman 1976, 87-88).

Lieberman argues that documents in Goetze 1945 that contain more than one of those variants considered distinctive for different areas pose a challenge of consistency to the study of variation. The puzzle becomes more complicated if one accounts for instances of diverse spellings, not only within the same document, but also across texts classified under the same regional label. Moreover, it should be necessary to include a wider analysis of variables with fine-grained geographical and textual distinctions in the study of OB orthographic variation:

> A definitive description of Old-Babylonian Akkadian orthographic practice would not only require the differentiation of traditions for particular types of texts and parts thereof […] Distinctions within the generalized Southern-Old-Babylonian pattern, Northern-Old-Babylonian pattern, and the rest would also have to be made in accord with the fact that various cities had their own schools, and each of those schools taught its own set of spelling-rules to its students. (Lieberman 1976, 89)[51].

Nonetheless, the main patterns of North-South orthographic distributions remain valid in Lieberman's analysis of Old Babylonian texts:

> Texts are thus often assignable to North and South on the basis of orthographic practice, within a certain margin of error. (Lieberman 1976, 90).

The analysis on OB orthography in Lieberman 1976 includes a wider division of texts, covering not only northern and southern core Mesopotamian areas, but also the Diyala region, Elam, Assyria and the West[52]. However, the repertoire of orthographies assigned to regions is not complemented by any reference, qualitative nor quantitative, to textual evidence, meaning that a review of his conclusions based on research replication is not possible[53]. Unfortunately, it is also unclear whether Lieberman grounded his orthographic conclusions on the entire corpus he perused to supplement the evidence for loanwords available in the dictionaries[54], which consisted of 'approximately sixteen thousand four hundred published texts'[55].

Most interesting for accounting for and assessing the spelling variation in OB is that, while the basic North-South distinctions from Goetze are reproduced and seemingly attested in Lieberman's data[56], further annotations about characteristic regional orthographic practises that were not analysed in Goetze 1945, but had been pointed in the assyriological literature, are also reported in Lieberman 1976, including:

> - A difference between the writing of the sites of Ur and Nippur in the rendering of /pi/. According to Lieberman, the sign BI (*pí*) is employed sometimes in texts from

[51] It is worth noting that whereas Goetze speaks often of 'dialects' and linguistic features, Lieberman focuses his attention rather on scribal traditions as the main cause for the variation.
[52] The last three areas are not included in the present research.
[53] It should be noted, however, that a second part for the book was planned, which perhaps would have included such evidence. Unfortunately, Lieberman passed away before he could finish that task.
[54] Lieberman 1976, 9.
[55] Ibid.
[56] Ibid., 114-117.

Nippur, even though both Ur and Nippur 'are within a generalized "Southern" practice'[57].

- The spelling *pi₄* (KA) is related to texts from Sippar[58].

- The sign *ṭà* (HI) is typical of texts from the Diyala region (as it is for Mari and other peripheral areas).

- Similarly, *qa* (QA) occurs alongside *qá* (GA) in the Diyala region and in the North (Sippar)[59].

The number and type of texts that Lieberman includes in the orthographic grid table of regional variants[60] and the evidence for instances supporting or else challenging the distribution of the orthographic variables are, however, not specified.

3.2.4 Orthographic variables in ACCOB

The research purpose of the present chapter is to assess and put figures to the observations about orthographic variation in Old Babylonian made by scholars like Goetze, Von Soden and Röllig or Lieberman, most of which are widely assumed to be generally valid among the scholarly community (with the exception of earlier explanations about the distribution of variables for sibilants such as Goetze 1958, which have received detailed attention and revision in recent studies, see chapter four). The scope of the present research, however, will be reduced to a limited corpus of one specific type of texts, namely OB letters, assessing the distribution of the main orthographic variables for OB on 1800 documents from the Annotated Corpus of Correspondence in Old Babylonian (ACCOB). As explained before, most letters included in ACCOB have been related to specific authorship or to OB geographic locations by the editors of the texts or by other scholars writing about aspects of Old Babylonian history and society. The proposed associations between the letters in ACCOB and temporal or areal variables are uneven in terms of reliability, ranging from documents with attested appurtenance to an archive archaeologically bound to one site, to letters in which only the mention of certain locations within the text content give us clues about their origins. One important caveat for our classification of documents is the fact that the editors or reporters of the letters do not always provide us with the reasons why the documents are thought to relate to a specific time or location. A risk of epistemic circularity exists when letters, whose proposed association to a region is not directly explained by the editors, might have been regionally categorized as northern or southern on the sole basis of orthographic grounds, precisely the aspect to be assessed in the present chapter. Nevertheless, by using a quantitatively significant amount of documents whose criteria for categorization are diverse, the potential circular effects of aprioristic associations would be hopefully minimised.

The methodology of the present study was explained in chapter two. It is now important to highlight again the fact that this study does not intend to discuss, explain or account for every individual occurrence of all variables, a task that would only be safely undertaken in a scenario where sufficient specific and detailed information about the documents, their senders and receivers was undoubtedly established and acknowledged. Although details provided by scholars and editors of letters inform us in various ways about different

[57] Ibid., 89.
[58] Ibid. The form *pi₄* occurs however exclusively in PNs or GNs in the corpus.
[59] Ibid., 103, note 284.
[60] Ibid., 114 ff.

chronological, geographic or contextual backgrounds, insurmountable gaps prevent us from trying to present a definite and coherent representation of all the orthographic usages in every area of central Mesopotamia for the more than 300 years of the Old Babylonian period. Instead of that, we can only present isolated glimpses of the written reality of the time, linked to extra-linguistic features of diverse degree of reliability. In this sense, it is worth noting that our corpus of texts is, necessarily, a limited sample of one determined text genre. It is not intended to be a compendium of all OB letters available to us. As a sample, however, it is expected to be sufficiently representative to offer relevant information on the distribution of orthographic variables.

3.3 The spelling of 'emphatic' dental stops

The label 'emphatic' is an umbrella term in Semitic studies that describes the articulation of a diverse range of consonants that contrast with both the series of voiced and voiceless counterparts. The so-called 'emphatic' stops realize differently in Semitic languages, including uvular or pharyngeal articulations and ejective productions. For the Akkadian language, two series of consonants are normally described as 'emphatic'[61] and commonly transcribed using the convention of placing a dot under the closest consonant in the Latin alphabet: the sibilant *ṣ* and the dental stop *ṭ*. This chapter will analyse the OB spelling variation of the latter.

The stop consonant transcribed *ṭ* in the Akkadian literature is commonly thought to represent either a pharyngealized or a glottal dental stop (see i.a. Streck 2014, 16). However, although the sign used in the transcription (*ṭ*) is phonetically vague and its original articulation cannot be reconstructed with certainty, for the sake of convenience it will be used in the following sections to represent a distinctive OB phoneme /ṭ/ and a sign in the denomination of variables such as the pair (ṭa,ṭá). This phonological abstraction responds to the impossibility of determining a phoneme that reproduces faithfully an original Akkadian articulation which, moreover, could have varied among the diverse lectal stages represented by the long history of Akkadian. The employment of the sign *ṭ* in the following phonological descriptions of OB, although it might be an obstacle to cross-linguistic comparisons, has the advantage of not committing to rendering one specific phonetic articulation (which is difficult to ascertain), and on a secondary level, it conforms to conventional transcribing traditions in Assyriology and comparative Semitic studies.

3.3.1 /ṭa/

In contrast with general and unnuanced North-South division in OB for the rendering of emphatic CV syllables, including /ṭa/ in Goetze 1945 and Lieberman 1976, the great majority of occurrences in our corpus of letters (172 tokens), present the sign DA (*ṭa*) to render the segment /ṭa/, regardless of their northern or southern connections. It should be noted that Von Soden and Röllig (1991), while mentioning the regional differences for the spelling of the segments /ṭu/ and /ṭi/, do not make any specific statement about /ṭa/.
Table 1, below, shows some examples of the use of the sign DA to represent /ṭa/ in northern- and southern-related letters in ACCOB.

[61] Von Soden 1995 (GAG §26), 32. It should be noted that the Akkadian consonant *q* can also be considered 'emphatic': 'Wegen seiner gleichartigen Wirkung auf die benachbarten Laute wird meist auch der velare, am unteren Ende des weichen Gaumens artikulierte Palatal q mit seiner phonetischen Variante *ḳ* zu den emphatischen Konsnanten gerechnet.' (Von Soden 1995 [GAG §26], 32).

Table 4: Examples of the use of the sign DA for /ṭa/ in northern- and southern-related letters in ACCOB.

N.	Form	Letter	Sender	Location related	Region
1	*ba-al-ṭa-ta*	MHET 1/1 77:5	Awil-Adad	Sippar	North
2	*hi-ṭa-am*	Di 525 (De Meyer Fs. Finet):13	Ur-Utu	Sippar	North
3	*i-ṭa-ra-du-ˀnimˀ*	AbB 3, 6:20	Awil-Ištar	Lagaba	North
4	*pa-ṭa-ri*	AbB 9, 14:8	Alammuš-naṣir	Sippar	North
5	*ṭa-ba-tim*	AbB 3, 37:7	Belšunu	Lagaba	North
6	[t]*a-ṭa-ar-ra-da-nim-ma*	AbB 13, 52:17	Abi-ešuh	Babylon	North
7	*a-ha-mu-ṭa-ku-um*	UET 5, 22:5'	Ilšu-ellatsu	Ur	South
8	*aṭ-ṭa-ar-ˀdaˀ-a*[k-kum]	AUWE 23, 72:8	Apil-Nanaya	Uruk	South
9	*ša-pi-ṭa*	AbB 4, 138:20	Ud-balana-namhe	Larsa	South
10	*ṭa-a-ab*	AbB 10, 193:10	Ṣilli-Šamaš	Larsa	South
11	*ṭa-pu-ul*	AbB 11, 160:32	Kurum	Nippur	South
12	*ta-ṭa-ar-ra-da-šu*	AbB 11, 139:9	Ilabrat-palil	Adab	South

Other signs for /ṭa/ present in our corpus are HI (transliterated as *ṭà*): 37 tokens, and TA (transliterated as *ṭá*): 52 tokens[62]. The number of tokens for all three forms in ACCOB is represented in Figure 1:

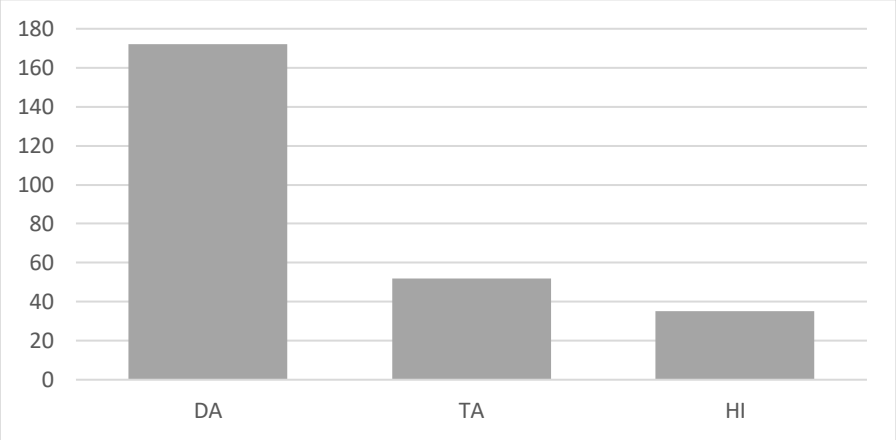

Figure 1: Representation of the segment /ṭa/ with syllable-signs in ACCOB

It is important to stress again that ACCOB is not a geographically balanced corpus: the provenance of the letters that make up ACCOB is biased towards northern settings (ca. 56% of the total of letters), whereas, southern areas (ca. 36%) and the Diyala region (ca. 8%) are underrepresented in different proportions. For that reason, the number of tokens for a particular variable must be examined individually in order to find distinctive trends in the data.

[62] Due to the difficult interpretation of the sign in a damaged tablet, two other cases of syllables transliterated as *ṭá* are not included in this study: AbB 8, 46:15 and UET 5, 70:9.

In the case of /ṭa/, whereas the sign DA is predominantly used in southern-related texts in ACCOB (exceptions will be shown in the sections below), it is also the most frequent spelling of /ṭa/ in northern-related letters, with the exception of the Diyala region.
An illustrative example of this, is the northern city of Sippar, where, despite its northern location, letters related to it present 48 instances of DA (*ṭa*), for only 4 of TA (*ṭá*)[63] and 6 of HI (*ṭà*)[64]. Figure 2 shows the number of instances for variants representing /ṭa/ in letters related to the northern site of Sippar (left) and the southern site of Larsa (right).

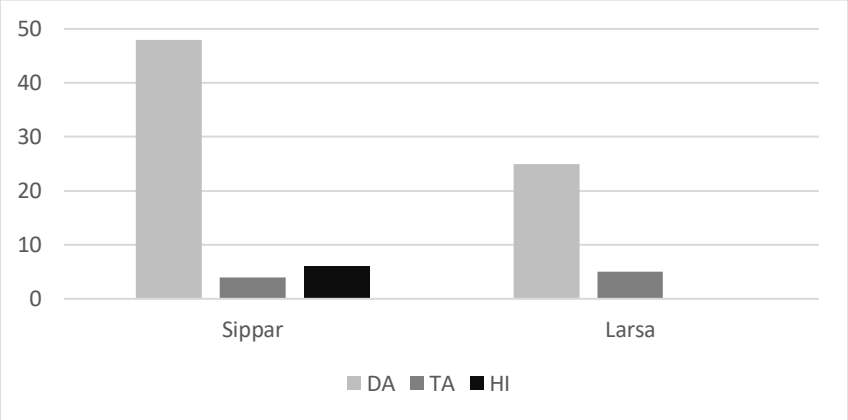

Figure 2: Number of occurrences of /ṭa/ in letters related to Sippar and Larsa in ACCOB

The graph shows no clear difference for the variable (ṭa,ṭá) in texts from Larsa or Sippar. Although it is indeed difficult to track the origin of letters, and of course, the relation between the letters represented on the left columns and the site of Sippar is very heterogeneous, we can however, expect a certain proportion of such correspondence to have been written either in Sippar, in areas close to Sippar, or further away, but by individuals or scribes autochthonous from Sippar. In this regard, the disproportional amount of DA signs in texts from Sippar seems to be significant enough to dismiss the assumption according to which the sign DA is rather an exclusive southern feature for /ṭa/ in Old Babylonian.

Other types of texts allegedly coming from northern areas, like the famous stele with Hammurabi's code of law, present a clear preference for this same orthographic pattern. Crucially, all 27 instances of the syllable /ṭa/ in the Code of Hammurabi[65] are written with the sign DA.

Moreover, the use of signs other than DA to represent /ṭa/ in late OB letters is particularly reduced, regardless of the fact that practically all the late OB documents in ACCOB relate to northern sites, since no OB documentation from southern Mesopotamia has been recovered after the year Samsuiluna 11. Whereas the whole account of instances in ACCOB sums up to 52 cases of *ṭá* for 172 cases of *ṭa* (slightly more than three times as frequent), in later texts, despite their northern bias, the proportion changes to 35 instances of *ṭa* for only 3 instances of *ṭá*. This is related, as it will be shown below, to the high proportion of *ṭá* values in letters from Hammurabi.

[63] AbB 1, 130:27; AbB 5, 258:31; AbB 6, 190:18 (perhaps sent form Babylon?) and AbB 12, 60:15. It should be noticed that the last two instances are related to Sippar only by having this site as destination, but they were probably sent from distant locations Ešnunna (s. AbB 1, 130) and Aššur (s. AbB 12, 60).
[64] AbB 12, 1:6; AbB 2, 164:13; Sumer 23 [IM 49219]:9 and Sumer 23 [IM 49225]:22 (both from the time of Sumu-la-El); AbB 1, 129:19; AbB 12, 119:7' and AbB 2, 141:13 (perhaps writing towards Aššur).
[65] After the transliteration in Borger 2006: Babylonisch-assyrische Lesestücke (AnOr, 54).

The following Figure 3 represents all the occurrences of the cluster /ṭa/ in letters from ACCOB that have been dated to a time posterior to the reign of Samsuiluna.

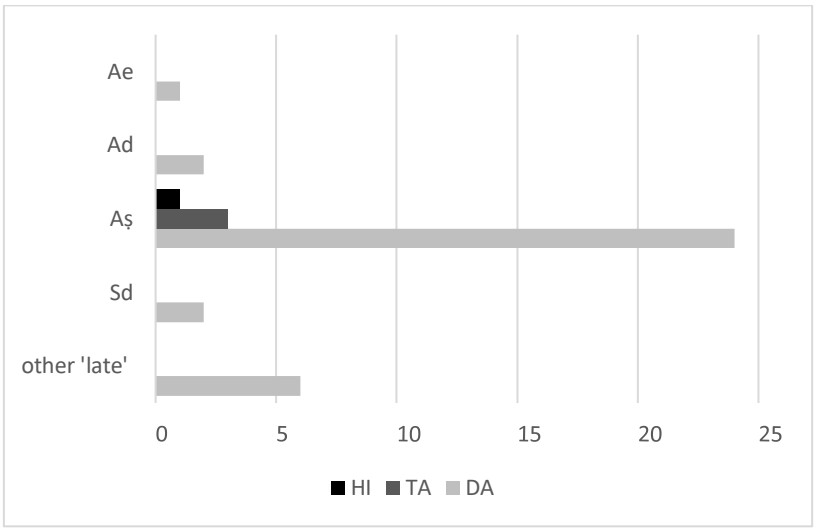

Figure 3: Total number of occurrences of /ṭa/ in late OB letters from ACCOB

At first sight, we can see a preference for the writing DA (*ṭa*) over TA (*ṭá*)[66] in letters (mostly related to Sippar and Babylon) dating from the reigns of Abi-ešuh[67], Ammi-ditana[68], Ammi-ṣaduqa, Samsu-ditana[69] and other letters identified as 'late OB' in the literature[70].

But, while it is true that most of these instances occur in the formulaic expression *lu balṭāta*, which becomes more frequent in OB letters from the reign of Samsuiluna and later OB correspondence (Sallaberger 1999, 25), and that a stereotyped formula might be more readily transmitted without necessarily changing the spelling of a form outside the formula itself, it is also significant that a very similar preference for another D-sign, DI (*ṭi*) over TI (*ṭì*), can also be observed in late OB letters in our corpus (see 3.3.2 below).

3.3.1.1 The sign TA (*ṭá*)

The data presented above confirmed that the North-South dichotomy for the variable (ṭa,ṭá) is not very informative for the OB letters of our corpus. Unlike other distinctions proposed by Goetze's pioneering observations on orthographical differences in OB (like the variable (pi, pí)), most modern descriptions of Akkadian orthography do not follow Goetze's assumption about the distribution of *ṭa* and *ṭá* in the OB record. Alternative explanations for the variable, however, have not been proposed yet, and e.g., in Von Soden and Röllig 1991, *ṭá* is simply listed as an Old Babylonian writing variant (as well as Old Assyrian and Old Akkadian *Gutäerzeit*), but with no further information about its distribution within the OB record. The data obtained from our sample of OB letters regarding the distribution of the sign TA to render /ṭa/ is described below.

[66] The sign HI (*ṭà*) is mostly attested in ACCOB in texts related to the Diyala region, which is under-represented in late OB letters.
[67] AbB 13, 52:17.
[68] AbB 7, 90:5 and AbB 11, 75:3'.
[69] VS 22, 84:5; VS 22, 87:6.
[70] The chronology of this group, less reliable, is mostly based on epigraphic and textual observations made by the editors: AbB 1, 18:23 and 29; AbB 5, 174:4'; AbB 5, 267:20; AbB 10, 73:5 and AbB 10, 205:5.

ACCOB contains 52 occurrences of TA for /ṭa/ scattered across the geographic and chronological coordinates attached to the letters. Nonetheless, there are two significant conclusions to be drawn from its pattern of distribution: *ṭá* chiefly characterizes the earliest OB letters and the letters from King Hammurabi of Babylon.

3.3.1.1.1 Archaic and Early OB letters

The emphatic stop syllable /ṭa/ occurs 20 times in those texts from letters in ACCOB that can be dated to the first part of the Old Babylonian period (roughly, the XX century and the XIX century BCE prior to the reigns of Rim-Sin of Larsa and Sin-muballiṭ of Babylon[71]). Out of these 20 cases, 12 forms are rendered with the sign TA: in Old Babylonian letters from Ešnunna[72], letters from the archive of Lu-igisa[73], letters from Larsa at the time of Sumu-El[74], letters from Kisurra[75] and one letter from Umma at the time of Sumu-abum[76]. This similarity between early southern letters and letters from Old Ešnunna might not be so unexpected if one considers their epigraphic characteristics at this period:

> the letters of this period from Tell Asmar are epigraphically similar to other Old Babylonian letters from the time of Sumu-abum and Sumu-la-El of Babylon such as the Lu-igisa archive. (Whiting, 1987, 5)

The similar orthography for dentals in early OB texts has been already observed by J. Westenholz on her study of Kisurra texts, where she also incorporates Goetze's assumption of a later northern OB dialect characterized by the usage of T-signs to represent /ṭ/:

> the writing of the dentals at Kisurra also seems to agree with that of ed-Der and the later northern Old Babylonian dialect: the voiceless stops are used to indicate the emphatic ones. (Westenholz, 1983, 224).

> the Lu-igisa archive has voiceless TA, TE, TI for /ṭa/, /ṭe/, /ṭi/ but DU for /ṭu/. (*ibid*.)

It is worth remembering at this point that both signs DA and TA are sometimes used indistinctively in early OB texts, especially from Tell Asmar, to represent both 'non-emphatic' stops /ta/ and /da/, and this might also affect the distribution of DA and TA to render their 'emphatic' counterpart /ṭa/. However, considering all early OB letters in ACCOB, the occurrences of DA as /ta/ (*tá*)[77] and TA as /da/ (*dá*)[78] can only be described as isolated cases in comparison with the overwhelming instances of *ta* and *da*.

[71] Named in the present study Early OB for the sake of grouping convenience.
[72] AS 22, 12:8; AS 22, 34:29.
[73] AbB 9, 226:6; AbB 9, 232:22; AbB 9, 262, 24.
[74] TCVP III 9:17; TCVP III 10:9; 21 and 22.
[75] FAOS 2, 153:31; FAOS 2, 174:9.
[76] AbB 13, 56:15', perhaps written from Umma, but sent to Kisurra (see Veenhof 2005, AbB 14, xxii).
[77] AbB 11, 1:5; AS 22, 20:9 and perhaps also AS 22, 3:2'.
[78] AS 22, 15:6', AS 22, 4:20 and perhaps AS 22, 15:7'.

In sum, the number of occurrences of /ṭa/ in the corpus is not big enough to draw a more detailed picture of the orthographic conventions in Early OB letters concerning the syllable /ṭa/, however, the frequent use of the sign TA for /ṭa/ in this period is significant compared to later OB texts, where DA is clearly a more recurrent sign in our extant record.

3.3.1.1.2 Letters from King Hammurabi of Babylon

Perhaps the most striking conclusion from the analysis of the orthographic distribution of the sign TA for /ṭa/ in our corpus of letters is its overwhelming occurrence in the letters sent by King Hammurabi of Babylon, both to the southern area of Larsa and to Mari. This is especially significant if one bears in mind the comparatively meagre number of tokens of *ṭá* elsewhere in the corpus. In fact, 18 out of the total 52 instances of the sign TA for /ṭa/ in ACCOB belong to the group of letters sent by Hammurabi[79]. Furthermore, this group is unequivocally uniform in this respect and contains only one exceptional use of the sign DA for /ṭa/[80].

Interestingly, this idiosyncratic rendering of /ṭa/ in this group, separates the orthography of the letters sent by Hammurabi from most of other contemporary letters, and also from other types of OB documents. The Code of Hammurabi from the Stele in Louvre does not present a single occurrence of this orthographic use of the sign TA, whereas /ṭa/ appears always rendered by the sign DA (a total of 27 times). The table below shows all the instances of /ṭa/ in both corpora: letters from King Hammurabi, on the left, and the Code of Hammurabi, on the right.

Table 5: Instances of /ṭa/ in letters from Hammurabi and in the Louvre stele version of the CH.

Letters from Hammurabi		**Code of Hammurabi**	
[aṭ]-*ṭá-r*[a]-*ad*	ARM 6, 54:6	*ba-al-ṭa-at*	VIII r 81
ha-aṭ-ṭá-tim	AbB 4, 94:8	*ba-al-ṭa-at*	XIII r 1
i-na-[a]*ṭ-ṭá-lu-ka*	ARM 28, 1:13'	*ba-al-ṭa-at*	XV r 13
na-ṭá-a-at	AbB 2, 43:20	*ba-al-ṭa-at*	XV r 56
ṭá-ʾraʾ-[di]-*im-ma*	AbB 2, 33:8	*ba-al-ṭa-at*	XV r 72
ṭá-a-ta-am	AbB 2, 11:9	*i-pa-aṭ-ṭa-ar*	XI 24
ṭá-a-tam	AbB 2, 11:25	*i-pa-aṭ-ṭa-ar*(!)-*šu*	XI 34
ṭá-a-tim	AbB 2, 11:23	*i-ša-aṭ-ṭa-ar*	XII 28
ṭá-a-tum	AbB 2, 11:8	*iṭ-ṭa-ra-ad*	X 6
ṭá-a-tum	AbB 2, 11:21	*mu-ṭa-ah-hi-id*	II 52
ta-na-aṭ-ṭá-la-ma	AbB 4, 109:6	*pa-ṭa-ri-im*	XI 21
ṭá-ra-di-im	AbB 2, 33:9	*pa-ṭa-ri-šu*	XI 26
ṭá-ra-di-im	ARM 28, 1:5	*pa-ṭa-ri-šu*	XI 32
ṭá-ra-di-im	ARM 28, 1:6	*ṭa-ab*	XXII r 51
ṭ[á-r]*a-di*-[im]	AbB 2, 57:5	*ṭa-ba*	IV 47
ṭá-ʾraʾ-[di]-*im-ma*	AbB 2, 33:8	*ṭa-ba-am*	XXV r 34

[79] AbB 2, 11:8, 9, 21, 23 and 25; AbB 2, 33:8 and 10; AbB 2, 41:15; AbB 2, 43:20; AbB 4, 10:8; AbB 4, 94:8; AbB 4, 109:6; ARM 6, 54:6; ARM 28, 1:5, 6, 3', 10' and 13'.
[80] AbB 13, 30:10.

ṭá-ra-di-im	ARM 28, 1:10'	*ṭa-ba-am*	XXV r 34
ṭá-ra-di-ka	AbB 2, 41:15	*ṭa-ba-am*	XXV r 34
ṭa(DA)-*ra-di-im*	AbB 13, 30:10	*ṭa-bu*	XIV r 72
		ṭa-bu	XV r 5
		ṭa-bu	XV r 30
		ṭa-bu	XV r 39
		ṭa-bu	XV r 96
		ṭa-bu-um	XXIV r 46
		ú-ra-aṭ-ṭa-ab	XIV 14
		ú-ša-am-ṭa	VII r 42
		ú-ša-am-ṭa	VIII r 9
		ú-ša-am-ṭa-ši	VII r 72
		ú-ṭa-ab-bu	XIV r 87

This obvious discrepancy in orthography between the Code of Hammurabi and the bulk of letters from the same king does not support the widely-accepted assumption of the existence of a standardised 'chancery' register for Old Babylonian:

> Z.T. wohl das Ergebnis einer bewussten Sprachreform ist die Verwaltungssprache Hammurabis, die uns in seinen Gesetzen und den Briefen seiner Kanzlei bezeugt ist. (Von Soden 1995 [GAG], 3)

But the difference in the variable (ṭa,ṭá) is not only prominent in the contrast between the letters sent by King Hammurabi and the stele with his collection of laws in the museum of Louvre. Further comparisons of other corpora are likewise illustrative of the peculiarity shown by the spelling of /ṭa/ as *ṭá* in Hammurabi's letters. Figure 4, below, presents an account of the occurrences of DA and TA to render /ṭa/ in the corpus of letters sent by Hammurabi and the Code of Hammurabi (CH), but also in the whole ACCOB corpus (excluding the instances from letters from Hammurabi) and in the collection of letters edited in the fourteen volumes of 'Altbabylonische Briefe in Umschrift und Übersetzung' (AbB) (again, excluding the letters from Hammurabi). This figure brings a clearer picture of the contrast for the variable (ṭa,ṭá) in general OB texts on one hand, and in the royal correspondence of King Hammurabi on the other[81].

[81] The data from AbB and ACCOB show the total number of tokens excluding the letters from Hammurabi, given apart in the inferior bar of the graphic. In the case of AbB, personal or geographical names are also included.

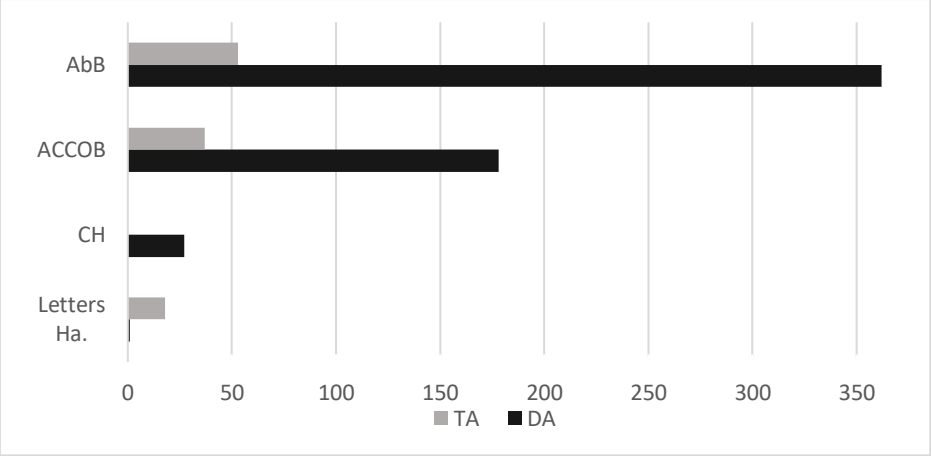

Figure 4: Instances of signs TA and DA to render /ṭa/ in four OB corpora

However, although the use of the sign TA for the segment /ṭa/ is arguably a salient factor of the letters sent by Hammurabi in comparison to other contemporary OB texts, other instances of the same orthographic trait occur in letters associated to northern-related locations, with the notable exception of Sippar, the best documented site in ACCOB.

3.3.1.1.3 Letters related to Babylon and its vicinity

The remaining 22 occurrences of TA for /ṭa/ in ACCOB that do not belong to the group of letters from Hammurabi or to the group of early OB letters, appear mostly in texts that are more loosely related to chronological or geographical coordinates. However, 12 cases out of said 22 occurrences (i.e. more than half of the occurrences), are associated to four geographical points: Babylon, Dilbat, Lagaba and Kish, all of them situated in a relatively small area around Babylon[82].

Table 6: Cases of ṭá related to Babylon and its vicinity (excluded those from Hammurabi).

N.	Form	Letter	Sender	Information
1	*i-pa-aṭ-ṭá-ar-ma*	AbB 14, 30:5	Adad-rabi	Archive of Lipit-Ea in Dilbat (Si)
2	*na-ṭá-a-ti*	AbB 3, 49:15	Belšunu	Archive of Lagaba (Si)
3	*ba-al-ṭá-ku-ma*	AbB 3, 22:7	Habil-kenum	Archive of Lagaba (Si)
4	*ta-ṭ*[á-r]*a-da-šu*	AbB 3, 65:23	unknown	Archive of Lagaba (Si)[83]
5	*ha-a*[ṭ]*-ṭá-a-tim*	RA 53, D12:7’	Itanah-Marduk	Archive of Kiš (Sin-mu)
6	*ši-ṭá*-[a]*m-ma*	RA 53, D37:7’	Marduk-naṣir	Archive of Kiš (Sin-mu)
7	*ta-ṭá-ar-r*[a]*-d*[am]	AbB 5, 82:6’	Marduk-naṣir	Archive of Kiš (Sin-mu)
8	*aṭ-ṭá-ar-da-aš-šu*	RA 53, D15:9	unknown	Archive of Kiš (Sin-mu)
9	*nu-ṭá-ab*	AbB 10, 114:12	the ‘mayor’	Hursagkalama or Kiš
10	*at-ṭá-ar*(?)-[...]	AbB 5, 63:4’	unknown	Kiš[84]
11	*ni-iṭ-ṭá-ar*-[dam]	FM 16, 13:17	Mut-hadqim et al.	Generals from Babylon?[85] (Ha)

[82] For the location of Lagaba s. Tammuz, 1996.
[83] Frankena 1978, 195.
[84] AbB V, ix ff.
[85] Joannès, FM 6, "Lettres de Généraux Babyloniens", 169-194.

12	*i-hi-ṭá-am-ma*	AbB 1, 2:11	Ammi-ṣaduqa	King of Babylon

These examples do not imply that the use of TA for /ṭa/ was the orthographic norm for that area. Many more instances of DA in the same archives and in other texts from archives related to Lagaba or Kiš prove that the phenomenon is more complex, and that the use of *ṭá* even in this area is only to be found occasionally in our record.

However, it should be noted that, if we focus exclusively on the distribution of the total of 52 cases of the writing *ṭá* found in the letters from ACCOB, we observe a more frequent association between the value and the area around Babylon. Including the 18 occurrences from letters sent by King Hammurabi, presumably resident or related in origin with the city of Babylon, 30 out of the 52 instances of *ṭá* in ACCOB have in common the fact of belonging to the site of Babylon or its surrounding area as shown in Table 4. The ratio goes up to 30 cases out of 40 if we exclude the distinct early OB letters from Ešnunna and the South. The remaining 10 occurrences of TA for /ṭa/ in the corpus, many of which providing less straightforward geographical or chronological information, seemingly present a broader regional spread, and include links to Larsa, Ur, Harradum and perhaps Sippar[86].

3.3.1.2 The sign HI (*ṭà*)

The use of the sign HI to represent the emphatic syllable /ṭa/ is particularly very well attested in OB documents from Mari[87] and also from the Diyala region[88].

A search in ACCOB returned 35 occurrences of this form, excluding personal and geographical names. As expected, we can observe that *ṭà* occurs mostly in texts related to the Diyala region,[89] the territory to which 20 instances out of a total of 35 cases of *ṭà* belong. These Diyala texts need to be chronologically distinguished from the archaic and early letters from Ešnunna, in which, as we have seen, /ṭa/ was rendered by the sign TA on two occasions, an orthographic feature that seems consistent with other early OB letters elsewhere.[90]

Outside the texts directly related to the Diyala region, ACCOB contains another 15 occurrences of HI for /ṭa/, all of them apparently connected to northern archives from

[86] JCS 21, 269:16; UET 5, 76:16; AbB 6, 190:18; AbB 6, 14:3; AbB 5, 258:31; AbB 12, 60:15; AbB 5, 157:19; Harradum 2, 60:6; AbB 1, 130:27; AbB 14, 9:6'.
[87] See e.g., Finet, 1956, Bottèro and Finet, 1954.
[88] See Whiting 1987, 6; Westenholz 1997:80 or Goetze 1958.
[89] AbB 8, 43:4'; AS 22, 35:18; Fs. Garelli p. 147-159:ii 24, iii 15 and iv 31'; JCS 24, 72:7; OBTIV 11:11, 24 and 25; OBTIV 17:24; OBTIV 21:26; Semitica 58, 1 [PM 204]:8, 9 and 22; Sumer 14, 2:13; Sumer 14, 4:16; Sumer 14, 10:10; Sumer 14, 12:11; Sumer 14, 13:24 and Sumer 14, 14:10.
[90] However, the earliest example of *ṭà* in our letters from the Diyala region is precisely one from an early OB letter from Ešnunna (AS 22, 35), probably dating from the reign of Ur-ninmar, whose orthographic features mark a chronological boundary within the old letters from Ešnunna (Whiting, 1987, 4).

Sippar (7)[91] or Babylon and its surrounding area: Babylon (2)[92], Lower Yahrurum[93] (4)[94], Lagaba (1)[95] and Kiš (1)[96].

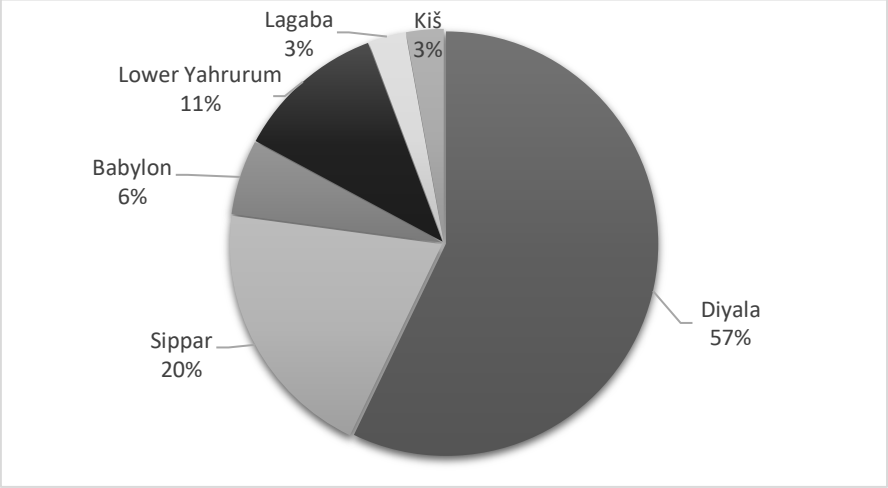

Figure 5: Distribution of instances of the sign HI (ṭà) in ACCOB

There is, however, one exception to this apparent disconnection between the writing *ṭà* and southern environments that needs further explanation. In one of the letters related to the Lower Yahrurum, AbB 14, 67, sent by the *šandanakkum* Šamaš-naṣir, we find a peculiar southern epigraphic style called 'Larsa script' (Veenhof 2005, 60 note 67a). Notably, other letters from the same sender do not present that southern script type, and in fact they are thought to had been originally sent from geographically distant places such as Babylon or Aššur (Veenhof [2005, 197, note 218a] identifies some '"Assyrianisms" in the spelling' of Šamaš-naṣir's letter AbB 14, 218). Since it is very likely that these letters belong indeed to the same individual, Šamaš-naṣir, who was an active traveller in charge of collecting taxes in 'natura'[97] and sending correspondence from different areas of OB Mesopotamia, their orthographic and epigraphic variability may illustrate the importance of the place of emission in the final textual and orthographic shape of the documents (at least for travelling individuals who presumably could have used the service of local scribes for their letters), and also manifest the diversity of features that might have co-existed in supra-regional exchanges of documents at the time of Samsuiluna.[98]

[91] AbB 1, 129:19; AbB 2, 141:13; AbB 2, 164:13; AbB 12, 1:6; AbB 12, 119:7'; Sumer 23 [IM 49219]:9; Sumer 23 [IM 49225]:22.
[92] AbB 6, 52:14 and 17 (both for the form *ṭà-ba-am*). It is important to underline that the same sender uses also the sign DA to render /ṭa/ in exactly the same words (*ṭa-ba-am*) in AbB 6, 36:7 and AbB 14, 187:4. For the identification of Belanum, the sender of the four letters see Leemans 1960, 103-108.
[93] For the location of the Lower Yahrurum region see, e.g., de Boer 2016 (ZA 106), 138-174.
[94] AbB 6, 81:6; AbB 14, 67:12 and 13; AbB 14, 80:19.
[95] AbB 3, 3:23.
[96] AbB 14, 82:25.
[97] Veenhof 2005 (AbB 14), xx.
[98] Another sign HI for /ṭa/ in southern environments is found in the personal name *A-hu-ṭà-bu-um*, from the early OB archive of Lagaš (AbB 5, 144). As stated before, geographical or personal names are not considered in this study due to their idiosyncratic characteristics. One lexical constraint related to such spellings in personal names could be related to the lexeme *ṭābum*, the Sumerogram counterpart of which was the same sign HI (ṭà). This however, does not seem to affect the distribution of the rest of our data in ACCOB.

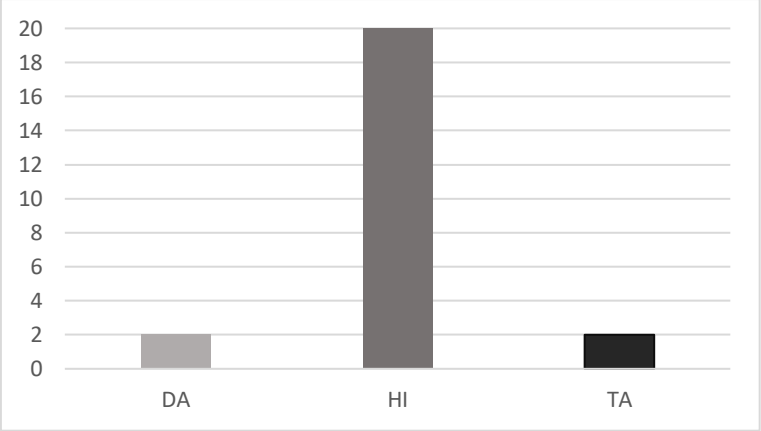

Figure 6: Representation of /ṭa/ in archives from the Diyala region in ACCOB

On the other hand, if we focus exclusively on the realization of /ṭa/ in texts related to the Diyala region in ACCOB, the geographic connection to the orthographic variable (ṭà) seems to be strong: 20 out of 24 instances of the syllable /ṭa/ in letters from archives in the Diyala region are written with the sign HI (*ṭà*). Of the remaining four cases, two are TA signs from early letters from Ešnunna (commented above), and another two are DA signs (*ṭa*) in JCS 24, 74:5' and Sumer 13, 109:37. The latter is a peculiar tablet with two letters from a *rubûm* of Ešnunna that might be in fact a literary text (Wu 1994, 77).

3.3.2 /ṭi/

The distribution of different spellings for the syllable /ṭi/ in ACCOB by means of either D-signs or T-signs presents similarities with that of the syllable /ṭa/. In this case, however, the variable does not include three frequent variants (like *ṭa*, *ṭá* and *ṭà*), but consists of a main binary choice between two signs: DI (*ṭi*) and TI (*ṭì*)[99]. The number of instances of both variants in the corpus is reduced, which makes it difficult to assess the influence of language-internal or external motivations on the variation. Nevertheless, some observations about the range of distribution of *ṭi* and *ṭì* are worth noting.

3.3.2.1 The sign DI (*ṭi*)

As with the writing of the segment /ṭa/, signs of the D-series (i.e., *ṭi*) are more frequently attested than signs of the T-series (*ṭì*) for the representation of /ṭi/ in the corpus (53 and 37 occurrences respectively). Furthermore, the geographical spread of texts with the sign DI representing /ṭi/ in ACCOB is not limited to southern areas; it covers both northern and southern archives, although it is virtually inexistent in the texts associated with the Diyala region. Instances of *ṭi* (DI) in letters related to places like Sippar[100], Lagaba[101] or Babylon[102] evidence that the North-South general division for this spelling proposed by Goetze (1945) and accepted also in Von Soden and Röllig (1991) (see section 3.2.1), needs to be refined and further investigated.

[99] The use of TE (*ṭi*$_4$) is exceptional in the corpus, where it occurs in only one occasion (*ṭi*$_4$*-dam*, AbB 11, 139:29).
[100] See: *hi-ṭi-im* (AbB 1, 18:16) and *ba-la-ṭi* (AbB 8, 122:9').
[101] See: *ih-ha-aṭ-ṭi-a* and *ha-ṭi-tam* (AbB 3, 15:26 and 27); *i-ha-aṭ-ṭi-a-ma*, *úh-ha-aṭ-ṭi-ma* and *i-ha-ṭi* (AbB 3, 37:12, 16 and 20).
[102] See: *ša-ha-ṭi-im* (AbB 1, 2:10, followed by a TA sign for /ṭa/ in line 11: *i-hi-ṭá-am-ma*), *ú-ša-áš-ṭi-ra-an-ni* (AbB 2, 1:10); *ša-ha-ṭi-im* (AbB 7, 47:9); *na-ṭi-im* (ABIM 1, 17:2); *ba-la-ṭi* (VS 22, 83:7) and *e-ṭi-ir* (VS 22, 84:13).

For the analysis of the variable (ṭi,ṭì), there is one factor that could affect the overall account and distribution of the sign DI in the corpus and should, therefore, be taken into consideration. In many OB texts, the grapheme DI can be employed to render two consonant-vowel clusters with different vocalic values: [ṭi] and [ṭe]. By contrast, the sign TI is assumed to represent more straightforwardly only the cluster [ṭi][103], given that there existed another T-sign denoting exclusively consonant-vowel clusters with the vowel /e/: TE (*ṭe₄*). Therefore, if the phonemes [i] and [e] were not perceived distinctively enough in certain lexemes or by certain speakers, this could alter the proportion of writings of the variable (ṭi,ṭì) found in the corpus, since only the sign *ṭi* (DI) appears to be widely used to represent both [ṭi] and [ṭe]. A case for alternation between the vowels [e] and [i] can be illustrated by the spellings of the form *niṭilka* (from *niṭlum* 'view, judgement' + *-ka* 2 SG.POSS.) in OB letters. Although this form is attested with the cluster *ṭi* written with either TI or DI, it is normally transcribed in modern editions of OB letters with an *i*-vowel in the second syllable[104]. However, it seems that the same form could occasionally be perceived by OB scribes as bearing an [e] sound: [nit**e**lka], judging by two spellings found in letters from the corpus that employ the sign TE (*ni-**ṭe₄**-el-ka*)[105]. For this particular lexeme, therefore, while the sign DI could be used whatever the phonetic quality of the vowel perceived by the scribe (both [i] or [e]), the sign TI, more unequivocally associated to the higher vowel [i], would normally be constrained to the form whose vowel is perceived distinctively as [i]. This could imply that a simple quantitative account of tokens *ṭi* and *ṭì* within a corpus built on modern transliterations of OB letters could be slightly biased, inasmuch as the spelling transliterated *ṭi* (but not *ṭì*) could in fact cover also segments perceived by OB scribes as [ṭe].

Given that the sign DI can normally represent segments with [i] or [e], the distribution of variable (ṭi,ṭì) and variable (ṭe,ṭe₄) (see section 3.3.3), could in principle reflect some variation regarding the perception of the vowels [i] and [e]. Nonetheless, while the use of signs TI and TE seems to suggest that different pronunciations for the lexeme *niṭilka* competed in OB, no further obvious examples have been found in ACCOB of lexemes with the same double representation of potential allophones [ṭi] and [ṭe] by means of the signs TI and TE, the most unequivocal graphemes denoting only one of the vocalic values [i] and [e] [106]. This question will be further developed in section 3.3.3.

On the other hand, geographical and temporal asymmetries in the use of the variants *ṭi* and *ṭì* can be inferred from the sample of texts in ACCOB, where the wide geographical distribution of the sign DI for segments transliterated *ṭi* differs from the more restricted circumstances where *ṭì* appears in the corpus.

3.3.2.2 The sign TI (*ṭì*)

The occurrences of the sign TI for /ṭi/ are distributed in the corpus following patterns that are more straightforwardly relatable to chronological and geographical variables than their counterpart variant spellings *ṭi* (DI).

[103] There are only two examples in ACCOB of the sign TI transliterated as the representation of /ṭe/: <te>-*ṭe₆-he-šum* and *i-ṭe₆-he-šum*, both in the same letter, AbB 9, 201, from the early OB archive of Lu-igisa.
[104] See, e.g., *ni-**ṭì**-il-ka* (TI sign, UET 5, 20:12) or *ni-**ṭi**-il-ka* (DI sign, AbB 3, 82:26).
[105] ABIM 1, 20:50 and 53.
[106] The only case in ACCOB where one lexeme can be found spelled with the signs TI and TE is the term *ṭēmum* (see next section), however, the only (broken) occurrence of TI: ˹*ṭe₆*˺*-em-šu-nu* (FAOS 2, 169:6) contrasts sharply with more than 300 instances of the term written with either the sign DI, or more often, the sign TE.

3.3.2.2.1 Archaic and Early OB letters

All 11 attestations in letters from early OB in the corpus present the sign TI to render /ṭi/. These include the correspondence from the archives of Lagaš[107], Kisurra[108], Ešnunna[109], as well as other documents similarly classified in the corpus as early OB texts[110]. Although it is only a small number of occurrences, their distribution resembles the results obtained from the study of the variable (ṭa,ṭá), where the T-sign was also preferred in early OB texts from various locations.

3.3.2.2.2 Letters from the Diyala region

Nine tokens for /ṭi/ in ACCOB appear in texts ascribed to archives from the Diyala region, and all of them are written with the sign TI[111].

3.3.2.3 The signs DI (*ṭi*) and TI (ṭì) in other OB letters.

Leaving aside early OB letters and texts related to the Diyala valley, other subdivisions of ACCOB present a heterogeneous admixture of DI and TI spellings for the segment *ṭi*.

Letters classified in the corpus as late OB (dating after the reign of Samsu-iluna, and therefore, exclusively found in northern sites), are only attested containing the D-sign variant (*ṭi*). The evidence for the representations of the syllabic cluster /ṭi/ in this period (only six tokens[112]) is too scarce to draw any firm conclusions about variation, but the preference of D-signs in this group of letters is comparable to the distribution of the variable (ṭa,ṭá) studied in section 3.3.1.

For the northern- and southern-related letters in ACCOB that are not classified under the early or late OB sub-groups, a quantitative account of the data distributed along a regional axis shows an irregular picture in which the sign TI associates more regularly to northern locations. The figure below shows the number of occurrences of *ṭi* and *ṭì* as they appear in texts included in ACCOB that have been related to the most important northern and southern OB sites of central Mesopotamia (excluding early and late OB letters).

[107] [l]*i-ṭì-ib* (AbB 9, 251:10') and *li-ṭì*-[i]*b* AbB 9, 267:19.
[108] *ri-ṭì-ip-tu-um* (FAOS 2, 154:18) and *ṭì-i-ib* (Santag 9, 185:18).
[109] *li-ṭì-ba-am* (AS 22, 27:7). It should be noted that the sign TI was also used to render /di/ in most letters from the early archive of Ešnunna. Only in letters from around the beginning of the XIX century BCE onwards is the sign DI employed for that syllabic segment (Whiting 1987, 5).
[110] *hi-a-ṭì-šu* (AbB 2, 128:8'); *šu-úh-m*[u]-*ṭì-im* (AbB 13, 54:7); [ṭ]*ì-ib-ba* (AbB 13, 58:30); *bu-lu-ṭì-im* (AbB 14, 220:7); ˹*ša*˺*-pí-ṭì-im* and *ša-pí-ṭì-*˹*im*˺ (OBTIV 4, 15 and 20).
[111] AS 22, 27:7 (already shown above, in note 108, as an early OB token); Fs. Garelli p. 147-159:iii, 2, 4, 19 and 23; OBTIV 4:15 and 20; OBTIV 23:7 and Semitica 58 4:7.
[112] The forms for this period retrieved from the corpus are: *ša-ha-ṭi-im* (AbB 1, 2:10); *hi-ṭi-im* (AbB 1, 18:16: chronology based on its 'späte Kursive' epigraphy, see Kraus in AbB 1, 18); *ša-ha-ṭi-im* (AbB 7, 47:9); *i-ṭ*[i-ib] AbB 7, 90:6'; *ba-la-ṭi* (VS 22, 83:7) and *e-ṭi-ir* (VS 22, 84:13).

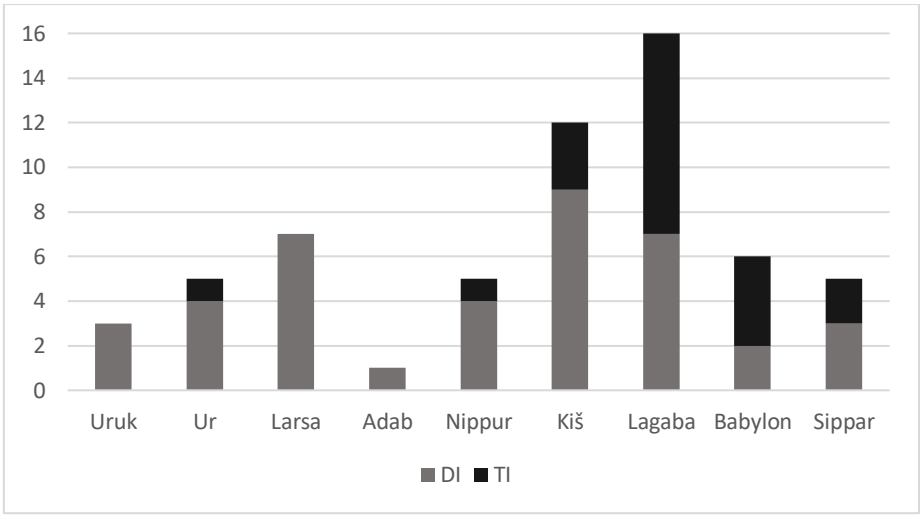

Figure 7: Number of instances of transliterated forms ṭi *(DI) and* ṭì *(TI) in the texts related to northern and southern sites in ACCOB, excluding early OB and late OB letters.*

The association between letters and locations in Figure 7 (Uruk[113], Ur[114], Larsa[115], Adab[116], Nippur[117], Kiš[118], Lagaba[119], Babylon[120] and Sippar[121]) are established according to diverse

[113] *ha-ṭi-i-tum* (BaM 2, p.54:iii, 12 and 15); *ha-ṭi-i-t* <um>(!) (sic. BaM 2, p.54:iv, 33).

[114] Sign DI: *ṭi-i*[b] (UET 5, 69:15'); *mi-ṭi-e-ti* (UET 5, 72:31); *hi-ṭi-im* (UET 5, 14:7'); *ni-ṭi-il-ka* (UET 5, 21:14). Sign TI in *ni-ṭì-il-ka* (UET 5, 20:12).

[115] *ṭi-i-ib* (AbB 4, 134:22); *ta-ba-aṭ-ṭi-il* (AbB 9, 17:25); *i*[b]-*ṭi-lu-m*[a] (AbB 9, 34:9); *hi-ṭi-tum* (AbB 14, 111:55); *ma-ṭi-i* (AbB 12, 78:24 and 25) and *ni-ṭi-il-ka* (CUSAS 15, 52:20).

[116] *ip-ṭi*-[x] (AbB 5, 27:14).

[117] Sign DI: *ri-ṭi-ib-tum* (AbB 11, 156:18); *ši-ṭi-ir-ti* (AbB 14, 160:10); *ša-ṭi-ir* (AbB 14, 160:15) and *ta-ba-ṭi-il* (AbB 11, 3:6'). The only form with the sign TI in the Nippur texts is *ma-ṭì-a-ku* (AbB 5, 160:3'). It should be noticed though, that the association of this letter and the site of Nippur is tentative, as recognised by Kraus in AbB 5: 'Nach (2) konnten über "Nippur" übrigens auch Tafeln aus Sippar eingedrungen sein.' (Kraus 1972 [AbB 5], x). Other signs in the letter, such as *pí* or *ṭú* are neither unequivocally proper of southern letters.

[118] It should be noticed that most of the occurrences of *ṭi* (sign DI) in letters related to Kiš belong to the letters from one sender called Etel-pi-Marduk (see Kraus 1985 [AbB 10], xvi and xvii, under (d) 'Archiv des Etel-pi-Marduk in Kis(?)' and e) 'Archiv des Gimil(li)ja in Kis(?)' for the relationship between these letters and the non definite appurtenance of the archives to the site of Kiš): *ba-la-ṭi-im* (AbB 3, 92:4'); *ta-ha-ṭi* (AbB 3, 92:3''); *i-ṭi-ru-um-ma* (AbB 10, 5:16); *i-ṭi-ir-ma* (AbB 10, 5:16); *ni-ha-aṭ-ṭi* (AbB 10, 15:24); *mi-ṭi*-[i]*t* (AbB 10, 16:4). The last two letters (AbB 10, 15 and 16) also present the spelling *ṭù*, (in the form *hi-ṭù-um* [AbB 10, 15:32 and AbB 10, 16:13']) a typical feature of southern-related letters (see section 3.3.4), and the sign DI for *ṭe* in *ṭe-em-šu-nu* (AbB 10, 16:16') (see next section). The other occurrences of *ṭi* related to Kiš are: *na-ṭi-il* (AbB 10, 97:8'), *hi-*<a>*-ṭi-im* (AbB 10, 91:4', a letter directed to the same individual, Etel-pi-Marduk, mentioned above) and *ta-ha-aṭ-ṭ*[i] (AbB 5, 88:4). Sign TI: *ba-li-iṭ-ṭì* (AbB 10, 4:36); *hi-ṭì-it* and *hi-ṭì-tim* (AbB 5, 127:9 and 12).

[119] Sign DI: *ih-ha-aṭ-ṭi-a* and *ha-ṭi-tam* (AbB 3, 15:26 and 27); *i-ha-aṭ-ṭi-a-ma*, *úh-ha-aṭ-ṭi-ma*, *i-ha-ṭi* (AbB 3, 37:12, 16 and 20); [hi-a-ṭ]*i-im* (AbB 3, 38:6) and *li-ma-ṭi* (AbB 3, 60:11).
Sign TI: *ni-ṭì-il-šu* (AbB 3, 2:46); *mi-ṭì-tum*, *im-ṭì* and *mi-ṭì-tim* (AbB 3, 3:10 and 11); *hi-ta-aṭ-ṭì-i* (AbB 3, 16:21); *ri-ṭì-ib-ti*[m]; *bu-ul-lu-ṭì-im* (AbB 3, 38:15); *ri-ṭì-ib-ta-ni* (AbB 3, 47:8) and *ih-ha-aṭ-ṭì-a-ma* (AbB 3, 52:39).

[120] Sign DI: *ú-ša-áš-ṭi-ra-an-ni* (AbB 2, 1:10) and *na-ṭi-im* (ABIM 1, 17:2).
Sign TI: *hi-ṭì-it* (AbB 4, 18:23); *hi-ṭì-tu*[m] (AbB 6, 107:9); *ha-ma-ṭì-im* (ARM 6, 53:7) and [š]*e-eh-ṭì-im* (ARM 28, 6:9).

[121] It should be noticed that one of the occurrences of DI in the Sippar column of the graph (*ba-la-ṭi* [AbB 8, 122:9']) belongs to the group of letters sent by Atahzum. As it will be commented in following sections, these letters, originally allocated in the northern group, contain features infrequent in northern-related OB letters such as the spelling forms *ṭù* and *pi*. The other instances of *ṭi* in letters related to Sippar (except from late OB)

grouping criteria (see chapter 2). The often imprecise origin of the variants and the small number of tokens included in the corpus imply that one can only sketch a blurred impression of the relationship between regions and spellings of /ṭi/ in the sub-corpus of letters under scrutiny. However, it suggests for the variable (ṭi,ṭì) a tendency towards a more frequent use of D-signs in southern cities, and a more entangled mixture of D- and T-signs in northern cities[122], which is also consistent with the data observed for the variable (ṭa,ṭá) and does not support, for the present study on letters, a clear-cut North-South discrimination of the signs TI and DI previously suggested in the literature.

3.3.3 /ṭe/

The two most frequent graphic representations of the segment /ṭe/ according to the transliterations of OB letters included in ACCOB, are the sign DI (*ṭe*) and the sign TE, a specific sign unambiguously associated with the vowel /e/, either for the value *te* or *ṭe₄*.

As commented in the previous section, the two vocalic values that the sign DI can potentially represent (/i/ and /e/) pose an extra challenge for the attempt to establish correspondences between the two main spellings for the segment /ṭe/. In this regard, the analysis of the distribution of the variant spellings *ṭe* and *ṭe₄* for the representation of only one specific lexeme is expected to help narrow down the extent to which language internal factors or extenal factors correlate more significantly with the variable (ṭe,ṭe₄) by eliminating potential discrepancies related to lexical divergence. Within the transliterations of OB letters included in ACCOB, around three quarters of all instances of /ṭe/, transliterated either *ṭe* (DI) or *ṭe₄* (TE), belong to the rendering of the lexeme *ṭēmum* 'report, instruction', summing up to a total of 345 occurrences[123]. This frequently attested term provides the opportunity to assess the distribution of the orthographic variable (ṭe,ṭe₄) for one specific lexical form attested in a quantitatively robust number of instances.

The distribution of the variable (ṭe,ṭe₄) for the lexeme *ṭēmum* in ACCOB presents a clear disproportion: while the sign TE (*ṭe₄*) is found 319 times, its alternative spelling DI (*ṭe*) occurs only in 42 occasions.

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are: *ú-ša-aṭ-ṭi-il* (AbB 2, 84:27) and *šu-ṭi*-[i]*r-šu* (AbB 12, 119:10'). The sign TI occurs in the following spellings: [hi-t]*a-ú-ṭì-im* (AbB 9, 117:15) and *ba-la-ṭì-ku-nu* (AbB 12, 60:30).

[122] Moreover, in northern-related letters from Lagaba one can find competing spellings for /ṭi/ within the letters of the same individual or even within the same document: see, e.g. the sign TI in *bu-ul-lu-ṭì-im* (AbB 3, 38:15) and DI in *i-ha-aṭ-ṭi-a-ma, úh-ha-aṭ-ṭi-ma, i-ha-ṭi* (AbB 3, 37:12, 16 and 20); [hi-a-ṭ]*i-im* (AbB 3, 38:6) in letters sent by Belšunu.

[123] The only case of the sign *ṭe₆* (TI) for the spelling of the form *ṭēmum*, *ʿṭe₆ʾ-em-šu-nu* (FAOS 2, 169:6) is not included in the account.

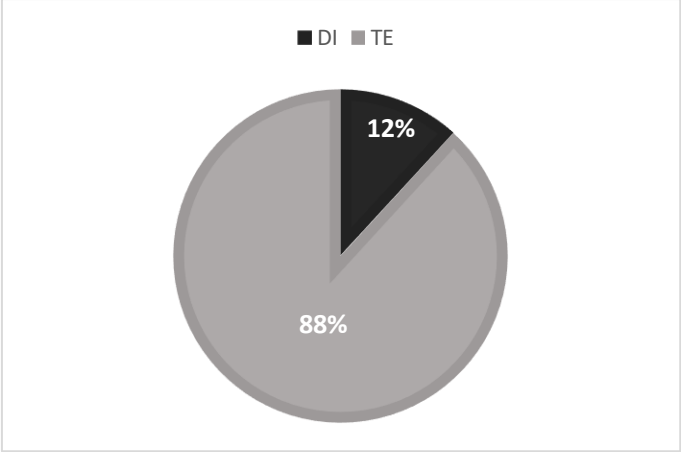

Figure 8: Percentage of the distribution of signs DI and TE rendering /ṭe/ for the lexeme ṭēmum *in transliterations of OB letters in ACCOB.*

The widespread use of *ṭe₄* in OB letters is regular across geographical and temporal variables. It occurs very frequently in both northern and southern-related documents, and it is attested in texts as early as the archaic letters from Ešnunna[124], and as late as letters from the reign of Ammi-ṣaduqa[125].

The distribution of the sign DI to render /ṭe/, however, is more restricted: 36 of a total of 42 instances of the sign DI (*ṭe*) representing the lexeme *ṭēmum* in ACCOB (85%) occur in texts associated with southern locations, especially from the archive of Šamaš-magir (ambassador of Larsa in Diniktum[126]). Regarding chronology, at least one example for *ṭe* comes from an early letter from the archive of Lu-igisa[127]. Table 7, below, lists all the instances of *ṭēmum* in the corpus that contain the sign DI for /ṭe/.

Table 7: Instances of the term ṭēmum *in ACCOB where the cluster /ṭe/ is represented by the sign DI.*

N.	Form	Letter	Sender	Related location
1	*ṭe-e-em*	AbB 10, 57:6	Enlil-bani	South?
2	*ṭe-e-em-ka*	AbB 4, 72:13	Idinjatum	Larsa
3	*ṭe-em*	AbB 5, 159:5'	Ipiq-Tišpak	Nippur?
4	*ṭe-em*	AbB 5, 10	Kambaṣum	Adab
5	*ṭe-e-em*	AbB 11, 160:6	Kurum	Nippur
6	*ṭe-e-em*	AbB 11, 160:18	Kurum	Nippur
7	*ṭe-em-ka*	AUWE 23, 79:16	Nabil-ilišu	Uruk
8	*ṭe-em-ka*	AbB 9, 235:13	Narum-rabi	Lagaš
9	*ṭe-e-mi*	UET 5, 32:17	Nidnat-Sin	Ur
10	*ṭe-e-em*	RA 2008, n. 2:4	Rim-Sin	Larsa
11	*ṭe-e-em*	JCS 21, 269 [A7535]:11	Rim-Sin	Larsa
12	*ṭe-e-em*	AbB 8, 14:6	Rim-Sin-Enlil-kurgalani	Larsa
13	*ṭe-e-em*	AbB 8, 14:17	Rim-Sin-Enlil-kurgalani	Larsa
14	*ṭe-e-em*	AbB 8, 14:19	Rim-Sin-Enlil-kurgalani	Larsa

[124] AS 22, 3:7' and AS 22, 4:13 (in a broken context).
[125] For example, in *ṭe₄-mi-šu* (AbB 12, 2:12).
[126] Charpin 1983 (AfO 29/30), 104-8.
[127] AbB 9, 235:13.

15	*ṭe-e-em*	ABIM 26:6	Rim-Sin-Enlil-kurgalani	Larsa
16	*ṭe-e-em*	ABIM 26:13	Rim-Sin-Enlil-kurgalani	Larsa
17	*ṭe-e-em*	ABIM 26:14'	Rim-Sin-Enlil-kurgalani	Larsa
18	*ṭe-ma-am*	ABIM 26:25'	Rim-Sin-Enlil-kurgalani	Larsa
19	*ṭe-e-em*	ABIM 26:27'	Rim-Sin-Enlil-kurgalani	Larsa
20	*ṭe-mi-im*	ABIM 26:35'	Rim-Sin-Enlil-kurgalani	Larsa
21	*ṭe-e-em*	ABIM 26:38'	Rim-Sin-Enlil-kurgalani	Larsa
22	*ṭe-e-em*	AbB 10, 177:9	Ṣilli-Šamaš	Larsa
23	*ṭe-e-mi*	AbB 14, 60:13	Ṣilli-Šamaš	Larsa
24	*ṭe-e-em-ša*	AbB 11, 5:15	Šamaš-gartaš	Larsa
25	*ṭe-e-mi*	AbB 4, 140:7	Šamaš-hazir	Larsa
26	*ṭe-e-em*	AbB 4, 156:7	Šamaš-hazir	Larsa
27	*ṭe-e-em*	AbB 11, 176:5	Sin-apil-Urim	Larsa
28	*ṭe-e-em-ka*	AbB 11, 175:17	Sin-išmešu	Larsa
29	*ṭe-e-em*	AbB 8, 11:5	Sin-muballiṭ	Larsa
30	*ṭe-e-em*	AbB 8, 11:11	Sin-muballiṭ	Larsa
31	*ṭe-e-ma-am*	ABIM 16:10	Sin-muballiṭ	Larsa
32	*ṭe-e-ma-am*	ABIM 16:15	Sin-muballiṭ	Larsa
33	*ṭe-e-ma-am*	ABIM 16:20	Sin-muballiṭ	Larsa
34	*ṭe-e-em-ku-nu*	ABIM 16:25	Sin-muballiṭ	Larsa
35	*ṭe-e-em*	AbB 5, 172:23	Unknown V	Nippur?
36	*ṭe-em-ku-nu-ma*	AbB 9, 2:12	Warad-Šamaš	Larsa
37	*ṭe-em*(?)-*ka*(?)	AbB 14, 138:13	Aplum	Lower Yahrurum
38	*ṭe-mi-im*	AbB 14, 78:20	Belanum II	Lower Yahrurum
39	*ṭe-mi*	AbB 6, 100:9	Etel-pi-Marduk II	Lower Yahrurum
40	*ṭe-em-šu-nu*	AbB 10, 16:16'	Etel-pi-Marduk	Kiš?
41	[ṭ]*e-em*	AbB 4, 66:16'	Hammurabi	Babylon
42	[ṭ]*e-ma-am*	AbB 5, 245:20	Ipiq-Antim	Sippar

Only the last six instances in Table 7 (numbers 37-42) are related to northern locations. Three of them (n. 37, 41 and 42) present broken or difficult signs, while n.40 occurs in a letter that combines *ṭe* with *ṭe₄* (*ṭe₄-ma-am* [l.18]), as well as the spelling *ṭù* (see note 117, above), common in southern-related OB correspondence.

Going back to Goetze's dialectal observations, the study of the variable (ṭe,ṭe₄) in the well attested lexeme *ṭēmum* in the ACCOB corpus of letters shows that the usage of a D-sign, i.e. *ṭe*, correlates strongly with southern-related texts, as predicted. If we invert the equation, however, the data from the corpus cannot support the assumption that southern-related letters associate straightforwardly with the spelling DI for /ṭe/. In fact, the grapheme TE (*ṭe₄*) occurs also frequently in southern-related texts, as the data for the southern site of Larsa[128] shows in Figure 9. Interestingly, TE (*ṭe₄*) appears as the preferred spelling choice

[128] AbB 1, 109:2 and 3; AbB 4, 75:5; AbB 4, 111:8; AbB 4, 118:32 and 33; AbB 8, 3:31; AbB 8, 12:8, 13, 15 and 37; AbB 8, 15:43; AbB 9, 199:15; AbB 11, 172:17; AbB 11, 187:29; AbB 11, 194:6 and 37; AbB 13, 33:24 and 30; AbB 13, 45:12'; AbB 13, 120:17; AbB 14, 217:9; ABIM 1, 20:9 and 57; ABIM 1, 22:7, 10; ABIM 1, 28:6; UET 5, 75:13.

in the writing form of the lexeme *ṭēmum* in the letters associated to the site of Uruk included in the corpus[129].

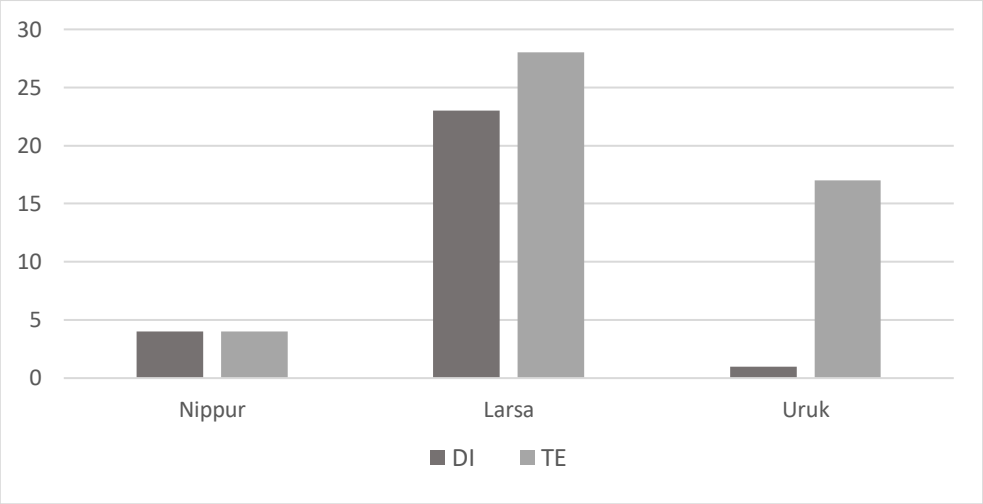

Figure 9: Number of signs representing /ṭe/ in forms of the lexeme tēmum *in the letters related to the southern sites of Nippur, Larsa and Uruk in ACCOB.*

The distributional pattern of the spellings *ṭe* and *ṭe₄* in transliterations of the term *ṭēmum* in OB letters suggests, therefore, that northern-related letters overwhelmingly present spellings with the sign TE to render /ṭe/, whereas southern-related letters contain two competing choices: *ṭe* and *ṭe₄*. The reasons for this variation in the southern letters of the corpus cannot be satifactorily associated to any language internal or external variable. It is easy to find both variant spellings rendering identical lexemes in letters from one single sender such as *i-**ṭe₄**-eh-he* (Lu-Ninurta AbB 11, 189:33) and *i-**ṭe**-eh-hi* (Lu-Ninurta AbB 4, 124:9); or ***ṭe₄**-e-ma-am* (Sin-muballiṭ AbB AbB 11, 194:37) and ***ṭe**-e-ma-am* (Sin-muballiṭ ABIM 16:10).

In the previous section a note of caution was expressed about the double phonological nature covered by the sign DI, which can represent two vocalic values [i] and [e]. After analysing the representation of the clusters /ṭi/ and /ṭe/ in modern transcriptions of OB letters, it is possible to make some observations to the question of whether the sign DI could have ever served the purpose of marking a vocalic differentiation between /ṭi/ and /ṭe/. As commented earlier, while the sign TI is more straightforwardly associated in OB with the *i*-vowel, DI is assumed to render both /ṭi/ and /ṭe/, which raises the problem of determining whether the distribution of the variable (ṭi,ṭì) could be in fact concealing a phenomenon of allophony related to the vowels [i] and [e]. Despite the previous example of /ṭi/ in the form *niṭilka* 'your judgement', which is attested with all TI, DI and TE signs, the great majority of forms that according to modern grammars are expected to bear /ṭi/ appear spelled only with TI or DI[130], whereas the great majority of forms expected to bear /ṭe/ occur written with DI or TE[131]. The geographical association of the letters play an important role in the distribution of signs: both spellings of /ṭi/ and /ṭe/ with the sign DI

[129] It should be noticed that 13 of these occurrences belong to the a letter from King Anam (BaM 2, p.54:i 2, 10, 14, 23, 24; ii:15, 22, 28, 33; iii:21; iv:15, 16 and 27). The rest of the instances related to Uruk are: AUWE 23, 76:6, 5' and 20' and AUWE 23, 82:7.

[130] The form *niṭilka* is the only exception found in the corpus.

[131] The sign *ṭe₆* (TI) for the spelling of the form *ṭēmum* in ˹*ṭe₆*˺*-em-šu-nu* (see note 123, above) is the only case of a sign TI occurring in the spelling of a form expected to contain /ṭe/.

occur more often in southern-related letters. However, *ṭi* (DI) is not infrequent in northern-related letters and *ṭe₄* also occurs often in southern-related letters. Should these cases imply that occurrences of the sign DI in the north for expected /ṭi/ contrasted with TI to express in fact an allophonic cluster [ṭe]? Or vice versa, does the variable (ṭe,ṭe₄) in the South hide a pronunciation [ṭi] for the sign DI in contrast with [ṭe] expressed by TE? The study of the representation of /ṭi/ and /ṭe/ in the sub-group of letters by individual senders who present spelling variation does not support the hypothesis of complementary allophonic distribution.

First, some individuals, particularly related to Ešnunna but also to other locations, present T-signs for /ṭi/ and /ṭe/, where TI is, as expected, used for /ṭi/, and TE for /ṭe/. This can be found, for example, in the instances of /ṭi/ and /ṭe/ in letters from Ibal-pi-El II of Ešnunna and Itur-hadnu of Lagaba:

Table 8: Example of two sender with complementary use of signs TI and TE for /ṭi/ and /ṭe/.

N.	Form	Sign	Sender	Letter
1	*ṭe₄-em*	TE	Ibal-pi-El II	Fs. Garelli p. 147-159,i:9
2	*ṭe₄-em*	TE	Ibal-pi-El II	Fs. Garelli p. 147-159,ii:12
3	*ṭe₄-em*	TE	Ibal-pi-El II	Fs. Garelli p. 147-159,iii:38
4	˹*ṭe₄*˺-[em]-*ka*	TE	Ibal-pi-El II	Fs. Garelli p. 147-159,iii:46
5	*ṭe₄-em-š*[u]-*nu*	TE	Ibal-pi-El II	Fs. Garelli p. 147-159,iii:51
6	*ṭe₄-em*	TE	Ibal-pi-El II	Fs. Garelli p. 147-159,iv:28'
7	*ṭe₄-m*[i-im]	TE	Ibal-pi-El II	Fs. Garelli p. 147-159,iv:16'
8	*ṭe₄-mi-šu-nu*	TE	Ibal-pi-El II	Fs. Garelli p. 147-159,iv:9'
9	*ṭe₄-mi*	TE	Ibal-pi-El II	Fs. Garelli p. 147-159,iv:28'
10	*pa-ṭì-ia*	TI	Ibal-pi-El II	Fs. Garelli p. 147-159,iii:2
11	˹*pa*˺-*ṭì-ia*	TI	Ibal-pi-El II	Fs. Garelli p. 147-159,iii:19
12	*pa-ṭì-ia*	TI	Ibal-pi-El II	Fs. Garelli p. 147-159,iii:23
13	*hi-ṭì-tam*	TI	Ibal-pi-El II	Fs. Garelli p. 147-159,iii:46
14	*ṭe₄-em-ka*	TE	Itur-hadnu	AbB 3, 3:27
15	*ṭe₄-em*	TE	Itur-hadnu	AbB 3, 3:28
16	*mi-ṭì-tim*	TI	Itur-hadnu	AbB 3, 3:11
17	*mi-ṭì-tum*	TI	Itur-hadnu	AbB 3, 3:10
18	*im-ṭì*	TI	Itur-hadnu	AbB 3, 3:10

The same complementary distribution is also principally followed in the letters from Hammurabi, the bigger individual sub-corpus in ACCOB. The only exceptions: [ṭ]*e-em*[132], *ša-ṭe-er*[133] and *ú-ša-áš-ṭi-ra-an-ni*[134] are isolated cases that do not seem to represent a regular distinction of the vocalic value of the lexemes, judging by the parallel attestation

[132] AbB 4, 166:16'.
[133] AbB 13, 46:17.
[134] AbB 2, 1:10.

of similar forms with expected signs TE and TI: *ṭe₄-em*[135], *ša-ṭe₄-er*[136] or *ú-ša-áš-ṭe₄-ru-šu*[137].

Crucially, there are no examples in the corpus of individuals whose letters include a clear combination of signs TI and DI to mark a vocalic difference. In other words, when both signs occur in the correspondence of a sender for a segment that includes /ṭ/, no evidence has been found pointing to a complementary distribution in which TI occurs for /ṭi/ (*ṭì*) and DI for /ṭe/ (*ṭe*). Apart from the case of Hammurabi commented above, only the letters of Belšunu and Marduk-naṣir (both from Lagaba) combine the signs TI and DI for a cluster involving the phoneme /ṭ/. In both cases, however, the sign TE also occurs for the representation of /ṭe/, leaving DI and TI as competing variants for forms that are etymologically and grammatically expected to contain [i].

Table 9: Instances of signs TE, TI and DI to render /ṭi/ and /ṭe/ in letters from Belšunu and Mardul-naṣir of Lagaba in ACCOB.

N.	Form	Sign	Letter	Sender
1	*ṭe₄-em-šu-nu*	TE	AbB 3, 34:8	Belšunu
2	*ṭe₄-em-šu-nu*	TE	AbB 3, 34:12	Belšunu
3	*ṭe₄-em-ku-nu*	TE	AbB 3, 34:41	Belšunu
4	*ṭe₄-em-ku-nu*	TE	AbB 3, 35:10	Belšunu
5	*ṭe₄*-[em]	TE	AbB 3, 36:9	Belšunu
6	*ṭe₄-em-šu-nu*	TE	AbB 3, 36:18	Belšunu
7	*ṭe₄-em-ka*	TE	AbB 3, 37:8	Belšunu
8	*ṭe₄-em-ka*	TE	AbB 3, 38:40	Belšunu
9	*ṭe₄-em*	TE	AbB 3, 50:8	Belšunu
10	*ṭe₄-em*	TE	AbB 3, 50:9	Belšunu
11	*ṭe₄-em-šu*	TE	AbB 3, 50:20	Belšunu
12	*ṭe₄-em*	TE	AbB 3, 50:23	Belšunu
13	*ṭe₄-em*	TE	AbB 3, 50:25	Belšunu
14	*ṭe₄-em*	TE	AbB 8, 148:9	Belšunu
15	*ṭe₄-em*	TE	AbB 3, 48:31	Belšunu
16	*ṭe₄-em-ka*	TE	AbB 8, 148:14	Belšunu
17	*lu-ṭe₄-hi-šu-ma* [138]	TE	AbB 3, 38:37	Belšunu
18	*ṭe₄-ma-am*	TE	AbB 3, 37:8	Belšunu
19	*i-ha-aṭ-ṭi-a-ma*	DI	AbB 3, 37:12	Belšunu
20	*úh-ha-aṭ-ṭi-ma*	DI	AbB 3, 37:16	Belšunu
21	*i-ha-ṭi* [139]	DI	AbB 3, 37:20	Belšunu
22	*bu-ul-lu-ṭì-im*	TI	AbB 3, 38:15	Belšunu
23	*ṭe₄-e-ma-am*	TE	AbB 3, 10:8	Marduk-naṣir

[135] AbB 4, 13:15 and passim.
[136] AbB 4, 40:17 and passim.
[137] AbB 13, 7:10.
[138] Precative form of the predicate *ṭehûm*.
[139] For the correspondence of instances 19, 20, 21, 28, 29 and 30 to the predicates *hiāṭum*, *haṭûm* and derived forms, see Frankena 1978, 55, 57 and 128.

24	*ṭe₄-e-ma-am*	TE	AbB 3, 10:16	Marduk-naṣir
25	*ṭe₄-em*	TE	AbB 3, 11:45	Marduk-naṣir
26	*ṭe₄-em-ka*	TE	AbB 3, 11:50	Marduk-naṣir
27	*ṭe₄-em-ka*	TE	AbB 3, 12:21	Marduk-naṣir
28	*ih-ha-aṭ-ṭi-a*	DI	AbB 3, 15:26	Marduk-naṣir
29	*ha-ṭi-tam*	DI	AbB 3, 15:27	Marduk-naṣir
30	*hi-ta-aṭ-ṭì-i*	TI	AbB 3, 16:21	Marduk-naṣir

Nonetheless, the most frequent combination of signs for /ṭi/ and/or /ṭe/ in individual sub-corpora of the ACCOB corpus (by number of senders: eleven), involves only the signs DI and TE. Nevertheless, a geographical distinction can be observed in the type of forms that these signs represent. Thus, the signs DI and TE occur in the letters from some individuals as competing variants for expected /ṭe/, and it is also plausible that the same sign would have been used in these letters to render /ṭi/, although no attestation of this can be found in the data. These senders are all related to the southern site of Larsa at the time of the reign of Rim-Sin.

Table 10: Instances of signs TE and DI to render clusters containing /ṭ/ in letters from senders in ACCOB where both signs are assumed to compete exclusively for the rendering of /ṭe/.

N.	**Form**	**Sign**	**Letter**	**Sender**
1	*i-ṭe₄-eh-hi-a-am*	TE	AbB 8, 15:19	Igmil-Sin
2	*ṭe₄-em*	TE	AbB 8, 12:8	Igmil-Sin
3	*ṭe₄-em-ku-nu*	TE	AbB 8, 12:37	Igmil-Sin
4	*iṭ-ṭe-hi-a-am*	DI	AbB 8, 15:15	Igmil-Sin
5	*ṭe₄-mi-im*	TE	AbB 8, 12:13	Igmil-Sin
6	*ṭe₄-mu-um*	TE	AbB 8, 12:15	Igmil-Sin
7	*ṭe₄-mu-ú*	TE	AbB 8, 15:43	Igmil-Sin
8	*ṭe₄-e-em*	TE	YOS 15, 21:9	Rim-Sin
9	*ṭe-e-em*	DI	RA 102, 2:4	Rim-Sin
10	*ṭe-e-em*	DI	JCS 21, 269 [A7535]:11	Rim-Sin
11	*ṭe-e-em*	DI	AbB 10, 177:9	Ṣilli-Šamaš
12	*ṭe-e-mi*	DI	AbB 14, 60:13	Ṣilli-Šamaš
13	*i-ṭe-eh-hi*	DI	AbB 14, 64:38	Ṣilli-Šamaš
14	*ṭe₄-he-ʾeʾ-em*	TE	AbB 10, 173:9	Ṣilli-Šamaš
15	*ṭe-e-em*	DI	AbB 8, 11:5	Sin-muballiṭ
16	*ṭe-e-em*	DI	AbB 8, 11:11	Sin-muballiṭ
17	*ṭe-e-ma-am*	DI	ABIM 16:10	Sin-muballiṭ
18	*ṭe-e-ma-am*	DI	ABIM 16:15	Sin-muballiṭ
19	*ṭe-e-ma-am*	DI	ABIM 16:20	Sin-muballiṭ
20	*ṭe-e-em-ku-nu*	DI	ABIM 16:25	Sin-muballiṭ
21	*ṭe₄-e-em*	TE	AbB 11, 194:6	Sin-muballiṭ
22	*ṭe₄-e-ma-am*	TE	AbB 11, 194:37	Sin-muballiṭ

By contrast, the rest of the senders that employ the signs DI and TE on their letters to render a segment with the consonant /ṭ/, indicate a pattern by which DI corresponds to the expected cluster /ṭi/ and TE to /ṭe/. The senders of this group relate to diverse locations, including Uruk, Kiš, Lagaba and Sippar. Table 11 shows examples of letters from three of these senders[140].

Table 11: Instances of /ṭi/ or /ṭe/ in the letters of Anam of Uruk, Etel-pi-Marduk (Kiš?) and Sin-šemi (Sippar) in ACCOB.

N.	Form	Sign	Letter	Sender	Location related
1	*ṭe₄-em*	TE	BaM 2, p.54,i:14	Anam	Uruk
2	*ṭe₄-em-šu-nu*	TE	BaM 2, p.54,i:10	Anam	Uruk
3	*ṭe₄-em*	TE	BaM 2, p.54,ii:22	Anam	Uruk
4	*ṭe₄-em*	TE	BaM 2, p.54,i:24	Anam	Uruk
5	*ṭe₄-em-ka*	TE	BaM 2, p.54,iv:16	Anam	Uruk
6	*ṭe₄-ma-am*	TE	BaM 2, p.54,i:23	Anam	Uruk
7	*ṭe₄-ma-am*	TE	BaM 2, p.54,ii:15	Anam	Uruk
8	*ṭe₄-*<<mi->>*em*	TE	BaM 2, p.54,i:2	Anam	Uruk
9	*ṭe₄-mi-im*	TE	BaM 2, p.54,ii:28	Anam	Uruk
10	*ṭe₄-mi-im*	TE	BaM 2, p.54,ii:32	Anam	Uruk
11	*ṭe₄-mi-im*	TE	BaM 2, p.54,iii:21	Anam	Uruk
12	*ṭe₄-e-mi*	TE	BaM 2, p.54,iv:15	Anam	Uruk
13	*ṭe₄-mu-um*	TE	BaM 2, p.54,iv:26	Anam	Uruk
14	*ha-ṭi-i-tum*	DI	BaM 2, p.54,iii:12	Anam	Uruk
15	*ha-ṭi-i-tum*	DI	BaM 2, p.54,iii:15	Anam	Uruk
16	*ha-ṭi-i-*<tum>(!)	DI	BaM 2, p.54,iv:33	Anam	Uruk
17	*ṭe₄-em*	TE	AbB 10, 5:4	Etel-pi-Marduk	Kiš?
18	*ṭe-em-šu-nu*	DI	AbB 10, 16:16'	Etel-pi-Marduk	Kiš?
19	*ṭe₄-em*	TE	AbB 10, 32:4	Etel-pi-Marduk	Kiš?
20	*ṭe₄-em-ma-a*	TE	AbB 10, 32:5	Etel-pi-Marduk	Kiš?
21	*ṭe₄-ma-am*	TE	AbB 10, 16:18	Etel-pi-Marduk	Kiš?
22	*ṭe₄-mi*	TE	AbB 1, 37:14	Etel-pi-Marduk	Kiš?
23	*mi-ṭi-*[i]*t*	DI	AbB 10, 16:4	Etel-pi-Marduk	Kiš?
24	*ba-la-ṭi-im*	DI	AbB 3, 92:4'	Etel-pi-Marduk	Kiš?
25	*i-ṭi-ir-ma*	DI	AbB 10, 5:16	Etel-pi-Marduk	Kiš?
26	*i-ṭi-ru-um-ma*	DI	AbB 10, 5:16	Etel-pi-Marduk	Kiš?
27	*ta-ha-ṭi*	DI	AbB 3, 92:3"	Etel-pi-Marduk	Kiš?
28	*ni-ha-aṭ-ṭi*	DI	AbB 10, 15:24	Etel-pi-Marduk	Kiš?
29	*ṭe₄-em-ka*	TE	AbB 12, 119:6'	Sin-šemi	Sippar
30	*ṭe₄-em*	TE	AbB 12, 119:6'	Sin-šemi	Sippar
31	*šu-ṭi-*[i]*r-šu*	DI	AbB 12, 119:10'	Sin-šemi	Sippar

[140] It should be noticed that the letters from Lu-Ninurta follow this trend but present also the competition between DI and TE for /ṭe/ proper of the senders from Larsa presented in Table 10. The particularity of the collection of letters from this individual and their combination of distinctive northern-like and southern-like features will be described in subsequent sections. See, e.g., section 3.4.2.

In sum, despite the ambiguity in the representation of /ṭi/ and /ṭe/ by means of the sign DI in OB, the study of the distribution of the signs TI, TE and DI in the letters from senders with attested variation of forms for either /ṭi/ and /ṭe/ suggest that: (1) In cases of use of different signs for segments including /ṭ/, DI is frequently used in complementary distribution with the sign TE, and associates with forms expected to contain [i]. (2) For some senders related to the southern site of Larsa, DI competes with TE in the representation of often identical forms of expected /ṭe/ (e.g., *ṭe-e-em* and *ṭe$_4$-e-em*), which cannot be undoubtedly regarded as the reflect of vocalic allophony.

The main factor that correlates with variation of the variables (ṭi,ṭì) and (ṭe,ṭe$_4$) in the corpus is an irregular preference for T-signs in northern locations (quite evident in the Diyala region), and a more frequent occurrence of D-signs, especially *ṭe*, in southern areas. A phonetic motivation for this variation is not obvious, but in any case, it does not seem to relate, in the letters of the corpus, to the vocalic component of the segments /ṭi/ and /ṭe/.

3.3.4 /ṭu/

The last case of study concerning stop consonant /ṭ/ is the variable (ṭú,ṭù), which investigates the orthographic choice in OB letters to render the syllable /ṭu/, either with the sign DU (*ṭù*) or with the sign TU (*ṭú*).

Figure 10, below, presents the percentage of occurrences of both signs in the Annotated Corpus of OB Correspondence (ACCOB).

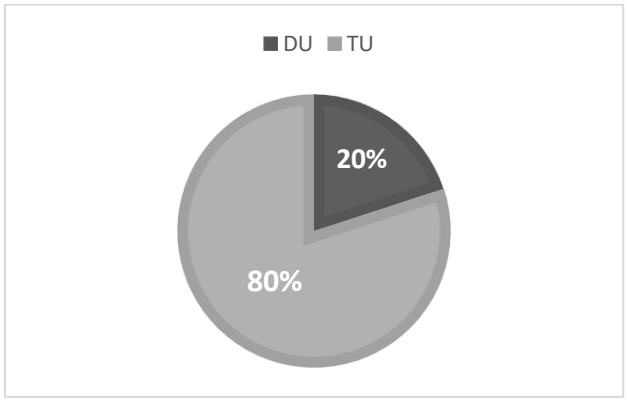

Figure 10: Total percentage for instances for the variable (ṭú,ṭù) in ACCOB

The corpus presents a clear majority of spellings with the sign TU that make up for around 80% of all instances of the variable (ṭú,ṭù): 596 cases of TU (*ṭú*) for 149 cases for DU (*ṭù*). Given that the corpus does not consist of a balanced sample of data and northern-related letters are overrepresented, if Goetze's observations on the orthography of OB mathematical texts are to be extended to OB letters, a greater number of T-signs for /ṭu/ can be expected to occur in ACCOB, inasmuch as most of the letters in the corpus associate to northern areas. A closer inspection to the data confirms the close relationship between the spelling DU (*ṭù*) and letters related to southern sites, while it also uncovers a number of informative exceptions. On the other hand, around 87% of the instances of the spelling *ṭú* (sign TU) occur in the larger sub-division of letters that are not classified as 'southern' (518 out of a total of 596 instances of the sign TU for /ṭu/[141]). Approximately the same

[141] Including 27 occurrences of *ṭú* in letters from the Diyala region.

percentage of the spellings with the sign DU (132 out of 149) are found in southern-related letters.

Table 12: Instances of the sign DU rendering /ṭu/ in letters of the ACCOB corpus.

N.	Form	Letter	Sender	Location related
1	*li-ba-al-li-ṭù-ú-ka*	UET 5, 4:5	Ahum-kenum	Ur
2	*li-ba-al-* *-ṭù-ú-ka*	AbB 11, 12:5	Ahum-waqar	Nippur
3	*li-ba-al-li-ṭù-ka*	AbB 5, 173:5	Ali-ahati	Nippur?
4	*li-ba-al-li-ṭù-ú-ka*	AbB 5, 39:6	Alitum	Nippur?
5	*li-ba-al-li-ṭù-ka*	BaM 2, p.54, i:7	Anam	Uruk
6	*na-ṭù-ú*	BaM 2, p.54, iii:6	Anam	Uruk
7	*šu-ú-ṭù-ba-ši-na*	BaM 2, p.54, iv:25	Anam	Uruk
8	*ṭù-ur-da-aš-šu*	AbB 11, 163:13	Apil-ilišu	Nippur
9	*ṭù-ur-da-am-ma*	UET 5, 2:9	Apil-Kubi	Ur
10	*li-ba-al-li-ṭù-ka*	AbB 11, 172:5	Apil-kubi	Larsa?
11	*li-ba-al-li-ṭù-ka*	AbB 11, 180:5	Aplum	Larsa?
12	*ṭù-ur-dam*	UET 5, 6:27	Arbi-turam	Ur
13	*li-ba-al-li-ṭù-ú-ka*	ABIM 22:5	Awil-Šamaš	Larsa?
14	*li-ba-al-li-ṭù-ú-ka*	ABIM 28:5	Awil-Šamaš	Larsa?
15	*li-ba-al-li-ṭù-ú-ki*	AbB 11, 178:7	Babaki	Larsa
16	*ṭù-ur-da-am*	UET 5, 61:10	[…]-bimunba	Ur
17	*iš-ṭù-ru-šu-nu-ti*	UET 5, 62:19	[…]-bum	Ur
18	*ṭù-ru-ud-ma*	AbB 14, 11:11	Damqi-ilišu	Girsu
19	*ṭù-ur-dam-ma*	AbB 14, 11:13	Damqi-ilišu	Girsu
20	*li-ba-al-li-ṭù-ka*	UET 5, 71:6	Ea-gamil	Ur
21	*li-ba-al-li-ṭù-ka*	AbB 10, 57:5	Enlil-bani	South?
22	*li-ba-al-li-ṭù-ka*	AbB 4, 139:4	Enlil-ilum	Larsa
23	*li-ba-al-li-ṭù-ka*	AbB 4, 149:5	Etel-pi-[…]	Larsa
24	*aš-ṭù-ra-ak*(?)-*kum*(?)	AbB 5, 1:12	Etel-pi-[…]	Adab
25	*ṭù-ur-da-aš-šu*	AbB 5, 1:15	Etel-pi-[…]	Adab
26	*li-ba-al-li-ṭù-ka*	AbB 3, 74:4	Ibbi-ilum	South
27	*li-ba-al-li-ṭù-ú-ka*	UET 5, 15:5	Ibni-Adad	Ur
28	*li-ba-al-li-ṭù-ki*	AbB 14, 165:6	Iddin-Sin	Larsa
29	*li-ba-al-li-ṭù-ku-nu-ti*	AbB 8, 12:7	Igmil-Sin	Larsa?
30	*li-ba-al-li-ṭù-ka*	AbB 8, 15:6	Igmil-Sin	Larsa?
31	*li-ih-mu-ṭù-ú-ma*	AbB 8, 15:36	Igmil-Sin	Larsa?
32	*li-ba-al-li-ṭù-ka*	ABIM 7:6	Igmil-Sin	Larsa?
33	*ṭù-ur-da-aš-šu*	AbB 3, 72:25	Ili-akiti	South
34	*ú-ba-al-la-ṭù-ú-ka*	UET 5, 21:11	Ilšu-ellatsu	Ur
35	*li-ba-al-li-ṭ*[ù-k]*a*	AbB 11, 133:3	Ilšu-ibnišu	Larsa?
36	*ṭù-ur-dam-ma*	AbB 11, 133:39	Ilšu-ibnišu	Larsa?
38	*li-ba-al-li-ṭù-ú-ka*	AbB 5, 159:5	Ipiq-Tišpak	Nippur?
39	*ú-ba-al-la-ṭù*	AbB 5, 159:17'	Ipiq-Tišpak	Nippur?
40	*ṭù-ur-da-aš-šu-ú-ma*	AbB 9, 251:6'	Ipquša	Lagaš

41	[ṭ]*ù-u*[r-dam]	AbB 9, 234:10	Irra-bani	Lagaš
42	DU-*ul-lu-ma-am*	AbB 9, 252:11	Lu-igisa	Lagaš
43	*li-ba-al-li-ṭù-ú-ka*	AbB 10, 184:6	Išumuatum	South?
44	*li-ba-al-li-ṭù-ú-ka*	AbB 14, 115:6	Išumuatum	South?
45	*li-ba-al-li-ṭù-ú-ka-ma*	UET 5, 33:5	Išušinak-naṣir	Ur
46	*ta-ṭù-li*	AbB 5, 10:4'	Kambaṣum	Adab
47	*ṭù-ur-da-am-ma*	AbB 9, 213:13	Ku-Nanna	Lagaš
48	*ṭù-ur-dam*	AbB 11, 160:17	Kurum	Nippur
49	*iš-ṭù*(!)*-ra-am*	AbB 14, 160:8	Lu-Ninurta	Nippur
50	*li-ba-al-li-ṭù-ka*	AbB 5, 170:5	Lu-Ninurta	Nippur?
51	*li-ba-al-li-ṭù-ka*	AbB 4, 51:5	Lu-Ninurta	Larsa
52	*ṭù-ru-ud-ma*	AbB 4, 56:16	Lu-Ninurta	Larsa
53	*iš-ṭù-ru*	AbB 4, 57:10	Lu-Ninurta	Larsa
54	*iš-ṭù-ru*	AbB 4, 69:19	Lu-Ninurta	Larsa
55	*li-ba-al-li-*[ṭ]*ù-ka*	AbB 4, 112:4	Lu-Ninurta	Larsa
56	*ṭù-ur-da-aš-šu*	AbB 4, 114:14	Lu-Ninurta	Larsa
57	*ṭù-ru-ud-ma*	AbB 4, 126:12	Lu-Ninurta	Larsa
58	*ṭù-ur-da-am*	AbB 9, 200:19	Lu-Ninurta	Larsa
59	*li-ba-al-li-ṭù-ka*	YOS 15, 32:4	Lu-Ninurta	Larsa
60	*li-bal-li-ṭù-ku-nu-ti*	LAOS 1, 46:6	Mannum-kima-iliya	Larsa
61	[l]*i-ba-al-li-*[ṭ]*ù-*[ka]	AbB 3, 90:5	Mar-erṣetim	South
62	*ši-ṭù-us-sà*	AbB 3, 90:9	Mar-erṣetim	South
63	*ṭù-ru-ud-ma*	UET 5, 29:15	Muhadum	Ur
64	*li-ba-al-li-ṭù-ú-ki*	AbB 11, 171:5	Munawwirum II	Larsa
65	*ṭù-ur-di-im-ma*	AbB 11, 171:17	Munawwirum II	Larsa
66	*li-ba-al-li-ṭù-ku-nu-ú-ti*	AbB 5, 171:6	Naramtum	Nippur?
67	*ṭù-ur-di-iš-šu*	AbB 5, 171:36	Naramtum	Nippur?
68	*li-ba-al-li-ṭù-ú-ka*	UET 5, 80:3	Nergal-gašer	Ur
69	*ṭù-ur-dam-ma*	UET 5, 80:18	Nergal-gašer	Ur
70	*li-ba-al-li-ṭù-ka*	AbB 5, 190:4	NIN-[…]	Nippur?
71	*li-ba-al-li-ṭù-ki*	AbB 4, 141:4	Nur-Ilabrat	Larsa
72	*ṭù-ur-da-aš-šu-nu-ti-ma*	RA 2008, 3:8	Rim-Sin	Larsa
73	*pu-ṭù-ur-šu-nu-ti-ma*	RA 2008, 4:10	Rim-Sin	Larsa
74	*i-ša-ap-pa-ṭù*	AbB 8, 14:14'	Rim-Sin-Enlil-kurgalani	Larsa
75	*li-ba-li-ṭù-ka*	ABIM 20:3	Ṣilli-Šamaš II	Larsa
76	*ú-ba-la-ṭù-ka*	ABIM 20:83	Ṣilli-Šamaš II	Larsa
77	*ru-uṭ-ṭù-ú-ub*	AbB 14, 60:6	Ṣilli-Šamaš	Larsa
78	*ap-ṭù-ra-am*	AbB 14, 61:7	Ṣilli-Šamaš	Larsa
79	*ṭù-ub*-x-(x)	AbB 14, 64:23	Ṣilli-Šamaš	Larsa
80	*ṭù-ur-dam-ma*	YOS 15, 67:16	Ṣilli-Šamaš	Larsa
81	*li-ba-al-li-ṭù-ka*	AbB 14, 148:5	Ṣissu-nawrat	Larsa?
82	*li-ba-al-li-ṭù-ka*	AbB 11, 27:8	Šallurum	Nippur
83	*ṭù-ur-da-am-ma*	AbB 11, 27:20	Šallurum	Nippur
84	*li-ba-*(al)*-li-ṭù-ka*	AbB 5, 189:6	Šamaš-hazir	Nippur

85	*li-ba-al-li-ṭù-ki*	AbB 4, 156:3	Šamaš-hazir	Larsa
86	*hi-ṭù-um*	AbB 4, 156:13'	Šamaš-hazir	Larsa
87	*li-ba-al-li-ṭù-ú-ki*	AbB 14, 163:4	Šamaš-hazir	Larsa
88	*ṭù-ur-di*(!)*-ma*	AbB 14, 163:33	Šamaš-hazir	Larsa
89	*li-ba-al-li-ṭù-ú-ka*	AbB 5, 175:6	Šamaš-ilum	Nippur
90	*li-ba-al-li-ṭù-ú-ka*	AbB 11, 4:4	Šamaš-nišu	Nippur
91	*ṭù-uh-hi-šu-ma*	AbB 9, 48:25	Šep-Sin II	Larsa
92	*li-ba-al-li-ṭù-ku-nu-ti*	AbB 9, 134:6	Šep-Sin II	Larsa
93	*li-ba-al-li-ṭù-ú-ka*	AbB 12, 78:7	Šep-Sin II	Larsa
94	*li-ba-li-ṭù-ka*	CUSAS 15, 52:6	Šep-Sin II	Larsa
95	*ṭù-ur-dam-ma*	CUSAS 15, 52:14	Šep-Sin II	Larsa
96	*li-ba-al-li-ṭù-ki*	AbB 14, 110:5	Šerum-ili	Larsa
97	*li-ba-al-li-ṭù-ka*	AbB 11, 164:5	Šumi-ilišu	Nippur
98	*ṭù-ur-da-am*	RA 102, 8:15	Sin-hazir	South
99	*li-ba-li*-DU-*ka*	AbB 11, 153:4	Sin-magir III	Nippur
100	*ṭù-ur-da-aš-šu*	AbB 11, 153:19	Sin-magir III	Nippur
101	*li-ba-li-ṭù-ka*	AbB 5, 166:5	Sin-magir	Nippur?
102	*li-ba-li-ṭù-ka*	AbB 11, 185:5	Sin-magir	Larsa
103	*li-ba-al-li-ṭù-ú-ka*	RA 102 6:5	Sin-magir	Larsa
104	*li-ba-al-li-iṭ*(?)*/ṭù*(?)*-ka*	AbB 5, 9:5	Sin-mu-[…]	Adab
105	*ip-ṭù-ur-ma*	AbB 11, 7:13	Sin-puṭram	Nippur
106	*li-ba-al-li-ṭù-ú*?*-ka*?	AUWE 23, 80:5	Sin-remeni	Uruk
107	*li-ba-li-ṭù-ka*	AbB 11, 16:5	Sin-tappe	Nippur
108	*li-ba-al-li-ṭù-ú-ka*	AbB 11, 187:6	Sin-uselli II	Larsa?
109	*ṭù-*<ur>*-da-aš-šu*	UET 5, 46:15	Sin-uselli	Ur
110	*li-ba-al-li-ṭù-ka*	YOS 15, 60:5	Sin-uselli	Larsa?
111	*li-ba-al-li-ṭù-ka*	AbB 11, 3:7	Taribatum	Nippur
112	*li-ba-al-li-ṭù-ú-ka*	AbB 4, 70:5	Taribatum	Larsa
113	*li-ba-al-li-ṭù-ka*	AbB 4, 71:4	Taribatum	Larsa
114	*li-ba-al-li-ṭù-ú-ka*	AbB 4, 134:5	Taribatum	Larsa
115	*li-ba-al-li-ṭù-ú-ka*	AbB 10, 186:6	Taribum II	South
116	*ṭù-ur-di-im*	AbB 3, 71:25	Taribum	South
117	*li-ba-al-li-ṭù*	AbB 3, 89:7	Unknown II	South
118	[li-ba-a]*l-li-ṭù-k*[a]	AbB 3, 109	Unknown III	South
119	*ṭù-uh-hi-ma*	AbB 11, 152:26	Unknown IX	Nippur
120	[…]*-li-ṭù-ki*	AbB 5, 172:4	Unknown V	Nippur?
121	*ṭù-ur-*[…]	AbB 5, 177:3'	Unknown VIII	Nippur?
122	*ha-aṭ-ṭù-um*	AUWE 23, 82:15	Unknown VIII	Uruk
123	[...a]*l-ʾliʾ-ṭ*[ù]*-ka*	AUWE 23, 94:5	Unknown XIX	Uruk
124	*aš-ṭù-ra-ak-kum*	AbB 14, 209:3	Unknown	South?
125	*li-ba-al-li-ṭù-ka*	AbB 3, 88:19	Unknown	South
126	*li-ih-mu-ṭù-nim*	AbB 10, 69:3	Unknown	South?
127	*ih-mu-ṭù-ú-ma*(?)	AbB 5, 157:18	Unknown	Nippur?
128	*ú-ba-al-li-ṭù-ú-šu*	AbB 9, 129:2	Watar-Šamaš	Larsa

129	*li-ba-al-li-ṭù*-[ka]	AbB 9, 114:5	Watar-Šamaš	Larsa
130	*li-ba-al-li-ʾṭùʾ-ú-ka*	YOS 15, 61:5	Watar-Šamaš	Larsa
131	*ṭù-ur-dam-ma*	AbB 11, 168:12	Zinu	Larsa
132	*li-ba-al-li-ṭù-ka*	AbB 14, 166:6	Zinu	Larsa

Figure 11, below, illustrates the significant difference in the distribution of tokens for the variable (ṭú, ṭù) in ACCOB after a preliminary North-South geographical categorization of the texts. While it seems clear that most occurrences of the sign DU for /ṭù/ appear to be associated to southern texts, it cannot be inferred from this raw data that southern-related texts are unequivocally characterised by such orthographic preference. At the same time, a small number of documents classified as 'northern-related' letters include instances of the variant *ṭù*.

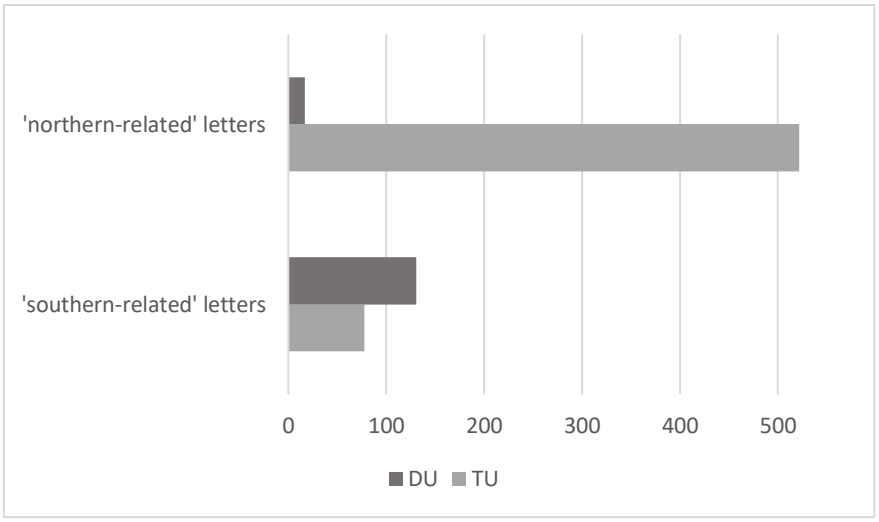

Figure 11: Number of instances of the variable (ṭú,ṭù) in ACCOB, after a general North-South subcategorization of letters[142].

It needs to be emphasized that a quantitative exhibition of orthographic variants, like the one in Figure 11, aims to offer a general understanding of the degree of relevance of which certain variables co-occur. Of course, there are a vast number of categorical factors that the present research study cannot directly control for. The categorization of letters in ACCOB, for example, is based on diverse sources of information rarely backed up with reliable archaeological records; the data about authorship and the place of emission of the correspondence is often not satisfactorily proven; and the orthographical data relies almost exclusively on transliterations of edited texts which might sometimes be questionable. However, by showing a large number of instances for a particular variable it is hoped that the effects of transliteration mistakes or categorization inadequacies are minimized. Furthermore, the instances that contrast with clear trends in the distributional scale provide interesting clues for constraints that can reshape the organization of our data in a more meaningful way.

The next sub-sections offer a closer examination to the 'exceptional' tokens of the variable (ṭú,ṭù) that diverge from the initial account of distributional tendencies in Figure 11, by

[142] The bar for the sign TU labelled 'northern-related letters' include 27 instances of *ṭú* stemming from texts associated to the Diyala region.

which northern-related texts are represented by the variant *ṭú* and southern-related texts by the variant *ṭù*.

3.3.4.1 Letters categorised as 'southern' but featuring the sign TU for /ṭu/

3.3.4.1.1 Early OB letters

Among those texts related to southern locations that include the sign TU to render /ṭu/, it should be highlighted the presence of seven early OB letters from the southern Mesopotamian sites of Kisurra, Larsa, Lagaš and Umma [143]. The orthographic choice for the sign TU applied to the syllable /ṭu/ in these texts seems to agree with the aforementioned preference in early letters for T-signs in the representation of the segments /ṭa/ and /ṭi/. However, the total number of attestations for the writing of /ṭu/ in the early OB letters in ACCOB are not completely uniform; they also include five significant counterexamples where the sign DU (*ṭù*) is used instead: one in an early OB letter from Ešnunna[144], and four more in southern letters from the archive of Lu-igisa in Lagaš[145]. The evidence is too scarce to draw further conclusions about orthographic habits to render /ṭu/ in different early OB archives, but as it is the case for /ṭa/ and /ṭi/, it suggests that T-signs for the rendering of the cluster /ṭu/ where more frequent in the earlier 'southern' OB letters than it will be in the posterior southern-related documents of correspondence.

3.3.4.1.2 Syllabic writing of the lexeme *ṭ/tuppum*.

One of the most frequent lexemes in our corpus of OB letters is the Akkadian noun *ṭ/tuppum* 'tablet, document', a term traditionally transcribed in most editions of OB letters with an initial consonant *ṭ*. This is also the case for most transliterations gathered in the ACCOB corpus, and therefore, instances of the syllable /ṭu/ originating from transliterations of the lexeme *ṭ/tuppum* find themselves among the data shown in Figure 11 above. The phonological status of the first consonant, however, is not universally interpreted as an emphatic dental stop in the scholarship.

One initial obstacle to solve this problem lies in the way the lexeme is written. In most occurrences of *ṭ/tuppum* in Old Babylonian texts, the term is written with the sign DUB, a grapheme that can be used as a logogram rendering a full word[146]. The sign DUB for *ṭ/tuppum* is, however, very frequently accompanied by a syllable-sign such as e.g. *pí* in DUB-*pí* 'my tablet'. This writing can be interpreted, and thus transliterated, as the ensemble of a logogram (DUB) plus a phonetic complement-sign (*pî*), or else as two syllabograms in a purely phonographic writing (*ṭup-pî*)[147].

[143] *ṭú-ur-dam* (AbB 9, 226:12); *li-ih-mu-ṭú-ni-im* (AbB 13, 54:9); [li]-*ih-mu-ṭú-nim*(?) (AbB 14, 211:14); [r]*u-ṭú-up-ma* (FAOS 2, 154:30); *li-ih-mu*-[ṭ]*ú-n*[i]*m* (FAOS 2, 178:19); *ma-ṭú-ma* (TCVP III, 5:11) and *im-ṭú-ú* (TCVP III, 9).

[144] *ṭù*-[ú]*r-dam* (AS 22, 32:28).

[145] AbB 9, 252:11 (following transliteration in CAD vol.19 p.125: *ṭù-ul-lu-ma-am*); AbB 9, 213:13 (*ṭù-ur-da-am-ma*); AbB 9, 234:10 (if the sign DU is correctly restored in [ṭ]*ù-ur-dam*); and AbB 9, 251:6' (*ṭù-ur-da-aš-šu-ú-ma*). Although the evidence is scarce to draw any reliable conclusion, it can be observed that all of the early OB instances of DU for /ṭu/ occur in word initial clusters, whereas only *ṭú-ur-dam* (AbB 9, 226:12) presents an initial sign TU.

[146] E.g. *a-na pí-i* DUB *i-si-ih-tim* 'according to the assignment document' (AbB 4, 8:15).

[147] See section 3.6 for a discussion on the logographic nature of the sign DUB in the rendering of the noun 'tablet, document'.

Two caveats are in order: a syllabic reading /ṭup/ for the sign DUB in OB is only rarely attested in lexemes not related to the lexeme *ṭ/tuppum*,[148] and furthermore, the same sign DUB can represent, not only the phonetic segment /ṭup/, but also the non-emphatic CVC-signs /tub/ or /tup/[149]. These factors make unclear the phonetic quality of the first consonant of the word *ṭ/tuppum*. Other phonographic representations of the term in the ACCOB corpus such as *ṭú-up-pi*[150], although eluding the sign DUB, do not offer a definite and unambiguous description of the first consonant inasmuch as the first sign *ṭú* has also the value /tu/. All these circumstances have obscured our interpretation of the phonological characteristics of the first consonantal element of the term *ṭ/tuppum*. Von Soden's *AHw* dictionary (1972) consequently presents the entry for the term with its double alternative options: *ṭ/tuppum*. In Von Soden and Röllig 1991 it is explained that:

> Für *ṭuppu* oder *tuppu* "Tafel" geben zwar die Lehnwörter (aram. *ṭifsār* und altsüdar. *ṭf*) *ṭ* an die Hand; in akkadischen Texten fand sich aber noch keine Schreibung, die eindeutig *ṭ* oder *t* bezeugte. (Von Soden and Röllig, 1991, xxi).

Kienast (1960) on the other hand indicates:

> *Tuppum* "Tontafel" (...) ist Lehnwort von sum. DUB. Vgl. Hebr. *ṭifsār* "Schreiber", das von akk. *ṭupšarru* entlehnt ist. Da der Lautübergang von [t] zu [ṭ] kaum erst im Hebräischen stattgefunden haben wird, ist im Akkadischen *ṭuppum* anzusetzen. (Kienast 1960, 44).

More recently, the Chicago Assyrian Dictionary (volume 19, T [Tet], page 148), citing examples from Lieberman (1976) states:

> The conventional reading *ṭuppu* reflects Hebrew/Aramaic phonology and does not conform to the rules by which Sumerian words were borrowed into Akkadian.
>
> Rather, because /ṭ/ is rendered in OB text from southern Mesopotamia with the signs DA, DI, DU, and in those from northern sites with TA, TE, TI, TU, and because of writings such as *tu-up-pu* in YOS 11 23:16, and cf. RA 85 17 No.5:1ff., TIM 2 15:20, 23, YOS 8 175:10, 158:12 etc., in Lieberman *Sumerian Loanwords in Old Babylonian Akkadian* 189ff., **the reading should be *tuppu***. [Emphasis added].

CAD offers a solution based on synchronic differences in OB orthography. Although the North-South discrimination of T- and D-signs to render emphatic dental consonants proposed by Goetze (1945) is taken for granted in CAD without any further analysis, the idea of looking for cases where writers consistently use the sign DU or else the sign TU to render /ṭu/, and then checking against syllabic writings of *ṭ/tuppum* on these individual corpora is pertinent. In this light, the ACCOB corpus of letters offers compelling support for the conclusions expressed in the Chicago Assyrian Dictionary.

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[148] Notice that the only example in the OB letters in ACCOB comes from the difficult term *ú-ṭup-lum*, 'uṭuplu-garment' (AbB 14, 110:49). See, however, a different transliteration for the same term, with 'non-emphatic' /t/ instead: *ú-tu-up-lum* in AbB 1, 66:6'.

[149] See Von Soden and Röllig 1991, 18.

[150] CUSAS 15, 116:8.

The reading /t/ is further confirmed by the extensive anaylisis of instances of the term in Streck's review of the 19th volume of CDA (Streck 2009). In what follows, the instances for *ṭ/tuppum* in the ACCOB corpus are discussed. Although many of the following occurrences of the term appear already included in Streck's article, some other syllabic representations of the word 'tablet' in OB letters complement the list presented there.

Leaving aside the overwhelmingly frequent instances of the lexeme *ṭ/tuppum* realised with the sign DUB, all the alternative syllabic writings for the term were extracted from the corpus. The results showed no occurrences of syllabic writings with the sign DU (*ṭù*) in ACCOB (nor in the whole corpus of letters AbB). The sign TU, on the other hand occurs in 18 cases in ACCOB[151], in letters from different areas. Table 13 below shows the instances of syllabic writings for the term *ṭ/tuppum* found in our corpus. The original transliteration used in the editions from where the data was gathered has been kept in order to illustrate the inconsistent transliterations of the sign TU for the word *ṭ/tuppum* in the OB literature:

Table 13: Syllabic writing for ṭ/tuppum *in ACCOB, excluding spellings using the sign DUB.*

N.	Form	Sender; reign (location related to letter)	Letter
1	***tu***-*up-pu*	Apil-Sin (Hursagkalama, Kish)	AbB 10, 112
2	**TU**-*up-pa-am*	Igmil-Sin; Rim-Sin (Larsa)	AbB 8, 15:9
3	**TU**-*up-pa-am*	Igmil-Sin; Rim-Sin (Larsa)	AbB 8, 15:20[152]
4	**TU**-*up-pi-im*	Igmil-Sin; Rim-Sin (Larsa)	AbB 8, 15:23[153]
5	**TU**-*up-pa-am*	Igmil-Sin; Rim-Sin (Larsa)	AbB 8, 15:31
6	***tu***-*pí*	Ilumma; Sumu-la-el (Sippar)	Sumer 23, pp. 9-10:47
7	***tu***-*pí-im*	Ilumma; Sumu-la-el (Sippar)	Sumer 23, pp.14-15:9
8	***ṭú***-[u]*p-pi*	Lu-Ninurta; Hammurabi (Babylon-Larsa)[154]	AbB 4, 62:10
9	***tu***-*up-pi-i-šu*	Lu-Ninurta; Hammurabi (Babylon-Larsa)	YOS 15 33:11[155]
10	***tú***-*up-pi*	Lu-Ninurta; Hammurabi (Babylon-Larsa)	AbB 4, 117:7
11	***ṭú***-*up-pi-ia*	Lu-Ninurta; Hammurabi (Babylon-Larsa)	AbB 4, 114:15
12	***ṭú***-*up-pi*	Lu-Ninurta; Hammurabi (Babylon-Larsa)	AbB 4, 52:3'[156]
13	***tu***-*up-pi-ia*	Ubarum (Adab)	AbB 11, 137:6
14	***tu***-*up-pi*	Ubarum (Adab)	AbB 11, 137:7
15	***ṭú***-*up-pa-šu*	Unknown; Hammurabi (Larsa)	AbB 13, 34:7
16	***ṭú***-*up-pí*	Unknown; Hammurabi (Larsa)	AbB 13, 34:10
17	***tu***-*pí-im*	Unknown; Early OB (Ešnunna)	AS 22, 46
18	***ṭú***-*pa-am*	Unknown; Ibal-p-el (Šaduppum)	JCS 24 70:12'

Since the majority of letters in ACCOB also apply mostly the sign TU to represent the segment /ṭu/ in any context, the prominence of the syllabic writing *ṭú* for the

[151] Other two possible instances in broken contexts are AbB 10, 177:37 and OBTIV 18: TL. 4.
[152] One of the references given by CAD vol.19 (2016), 148.
[153] One of the references given by CAD vol.19 (2016), 148.
[154] Lu-Ninurta sent his letters from the central court in Babylon, but he was very probably of southern origin (see Zheng 1996).
[155] I thank Prof. Veenhof for his kind help in the transliteration of this instance.
[156] In Streck 2009, 137 appears, by mistake, AbB 4, 51: 3'.

lexeme *ṭ/tupum* in the corpus is not alone a definite argument to determine the phonetic reality of the term beyond the writing system. However, if one takes letters individually and compares other instances of the segment /ṭu/ in those letters, a more meaningful picture emerges:

- Writers of instances number 1, 17 and 18 in Table 13 have only one very short letter in the corpus and no other examples of the consonant /ṭ/ are found. They are also related to northern sites, which use more frequently the sign TU for /ṭu/ (see Figure 11). Therefore, the same writing for the term *ṭ/tuppum* can be expected to occur independently of its phonetic realization either with /ṭ/ or with /t/.

- For numbers 6, 7, 15 and 16, other instances of /ṭ/ are indeed written with the same sign TU (*ṭú*). Again, the dual value of sign TU as /ṭu/ and /tu/ does not help determine whether the term under study had an initial /ṭ/ consonant or not.

- Since the letters sent by their writer do not contain any further instances of /ṭ/, numbers 13 and 14 are not unambiguously informative either. Nevertheless, they belong to the relatively small group of letters where the sign PI can render the syllable /pi/ (see section 3.4.1). This orthographic peculiarity is widely considered a southern OB feature and it correlates indeed with the characteristic writing of the sign DU for /ṭu/ in the OB letters of the corpus. As it will be shown section 3.4.2, the spelling *pi* (PI) occurs around five times less frequently than the alternative variant *pí* (BI) in ACCOB (a similar distribution to the sign *ṭù* compared to *ṭú*). However, despite the reduced number of instances of both signs *pi* and *ṭù*, they frequently co-occur in the same letters. Thus, there are 42 letters in ACCOB with at least one instance of *pi* and one of the signs of the variable (ṭú,ṭù). From these 42 letters, 26 contain only the sign *ṭù*[157], 13 only the sign *ṭú*[158] and 3 present instances of both signs *ṭú* and *ṭù* [159]. However, the co-occurrence of signs *pi* and *ṭù* becomes more relevant if the context is also considered for the instances of both signs *ṭú* and *ṭù* in these letters that also include at least once the spelling *pi*. Table 14 shows instances of /ṭu/ in letters that also feature the spelling *pi* with an account of whether the segment /ṭu/ occurs in the noun ṭ/tuppum, the predicate *ṭ/tuppûm*, a greeting formula (such as *liballiṭūka* 'may [god] keep you alive') or elsewhere.

Table 14: Occurrences of the variable (ṭú,ṭù) in the sub-corpus containing the 42 letters from ACCOB that display, at least once, the sign pi *(PI).*

	TU for /ṭu/	DU for /ṭu/
In the noun *ṭ/tuppum*	9	0
In the predicate *ṭ/tuppûm*	5	0
In greeting formulae	12	15

[157] AbB 3, 71; AbB 4, 57; AbB 4, 70; AbB 4, 126; AbB 5, 166; AbB 8, 14; AbB 8, 15; AbB 8, 46; AbB 9, 200; AbB 10, 57; AbB10, 69; AbB 11, 152; AbB 11, 168; AbB 11, 185; AbB 11, 187; AbB 14, 61; AbB 14, 64; AbB 14, 110; AbB 14, 163; ABIM 1, 20; ABIM 1, 22; AUWE 23, 82; BaM 2, p. 54; RA 102, 3; UET 5, 80; YOS 15, 60.
[158] AbB 1, 67; AbB 4, 52; AbB 4, 62; AbB 4, 154; AbB 5, 253; AbB 9, 114; AbB 11, 137; AbB 11, 139; AbB 12, 56; AbB 14, 16; AbB 14, 112; AbB 14, 164 and HE 107.
[159] AbB 4, 114; AbB 8, 15 and AbB 9, 48.

Elsewhere	3	21
Total N. occurrences	29	36

The instances of the sign TU from transliterations of the term *ṭ/tuppum* and the predicate *ṭ/tuppûm* (see next paragraph) could arguably distort the ratio of occurrences of the variable (ṭú,ṭù) if they were not considered to be transliterated as bearing an initial phoneme /ṭ/. Therefore, should one exclude these forms from the variable (ṭú,ṭù), a clearer co-relation between the signs *ṭù* and *pi* in OB letters would emerge, especially outside greetings formulae (see next section).
Consequently, for cases 13 and 14 in Table 13 (*ṭ/tu-up-**pi*** and *ṭ/tu-up-**pi**-ia*; examples not included in Streck 2009), although no further examples of the segment /ṭu/ are available in those letters to be compared against the writing of the term *ṭ/tuppum* 'tablet', the use of the sign *pi* suggests that it is not unlikely that the letters belonged to the group of writers that used the sign DU to render /ṭu/ in lexemes other than the term *ṭ/tuppum*.

- The letters sent by Igmil-Sin (numbers 2-5 in Table 13), on the other hand, present a clear-cut contrast between words containing the segment /ṭu/ and the syllabic writing of the term *ṭ/tuppum*. As noticed by Streck (2009), whereas the first ones are consistently written with the sign DU, both in greeting formulae: *li-ba-al-li-ṭù-ku-nu-ti* (AbB 8, 12:7); *li-ba-al-li-ṭù-ka* (AbB 8, 15:6); *li-ba-al-li-ṭù-ka* (ABIM 7:6), and elsewhere: *li-ih-mu-ṭù-ú-ma* (AbB 8, 15:36), *ṭ/tuppum* is spelled in all four cases with the sign TU (AbB 8, 15).

- Finally, letters 8-12 belong to an individual called Lu-Ninurta. He was Hammurabi's official in court, in charge of issues relating to Larsa, the area where he was active before the Babylonian conquest of the kingdom of Larsa[160]. His numerous letters present a mixture of northern as well as southern characteristic orthographic traits (e.g. the sign *pi* in instances from Table 13), which makes it problematic to classify the whole group of his letters into one single category. Due to his personal southern origins and to the number of orthographic features characteristic of southern texts that abound in his letters, Lu-Ninurta has been conventionally categorized in ACCOB into the group of writers related to the southern region. As it will be shown in next chapters, his case is illustrative of the extent to which sociolinguistic external factors can influence and entangle the resulting orthographic and linguistic shape of OB letters. In what concerns the variable (ṭú,ṭù) and the lexeme *ṭ/tuppum*, the letters from Lu-Ninurta provide some insightful information.

Table 15: Occurrences of the variable (ṭú,ṭù) in letters from Lu-Ninurta in ACCOB[161].

	TU for /ṭu/	DU for /ṭu/
In the noun *ṭ/tuppum*	5	0
In the predicate *ṭuppûm*	6	0

[160] Zheng 1996.
[161] I have not included [u]*b-ta-al-l*[i-ṭ]*ú-šu* (AbB 4, 122:14), because the sign in the tablet is so damaged than cannot be safely attributed to any of the variables. All the instances are shown in a table with Lu-Ninurta's orthographic and linguistic features in section 3.4.2.1.4.

In greeting formulae	4	3
Elsewhere	1	6
Total N. occurrences	17	9

While a balanced amount of northern and southern spellings in Lu-Ninurta's letters can be expected, (see e.g. the rate of 29 tokens of the variant *pí* for 26 for its counterpart sign *pi*), the raw number of total occurrences of the variable (ṭú,ṭù) might obscure the important internal skewness of their lexical distribution. Thus, Table 15 shows that the sign DU is never used for the noun *ṭ/tuppum*. Moreover, the sign TU, as well as serve as a syllabogram to render the noun *ṭ/tuppum*, it is also the only attested sign to represent the first segment of the predicate *ṭuppûm* 'to assign, attach, apply'. Lieberman defined the verb "to verify by means of a tablet"[162] and commented:

> We do not see on what basis F. R. Kraus assumes the verb to begin with an emphatic (/ṭ/) but the noun (correctly) with a non-emphatic /t/. (Lieberman 1976, 14, note 32).

It is, however, generally accepted that the predicate *ṭuppûm*, rather than being a derivation from a Sumerian loanword (DUB), relates in fact from the verb *ṭepûm* 'to extend, apply, add' (D-stem), whose etymology conveys the initial phoneme /ṭ/. The instances of the predicate *ṭuppûm* in the letters from Lu-Ninurta (which account for all the instances of this predicate in ACCOB) outline a scenario where the predicate *ṭuppûm* and the noun *ṭ/tuppum* stand in close relation:

1. A.[ŠÀ-*lum*] *i-na* ***ṭú-up-pi ṭú-*[*up-pu*]*-šu-nu-ši-im*** (AbB 4, 52:3'-4').
2. A.ŠÀ-*šu ša i-na* **DUB-*pí ṭú-up-pu-šu*** (AbB 4, 52:10'-11').
3. *a-na* A.ŠÀ-*lim ša-a-ti* ***ṭú-up-pu*** *a-nu-um-ma* ***ṭú-*[*u*]*p-pi*** *uš-ta-bi-la-ak-kum* (AbB 4, 62:9-10).

Given the phonetic similarity of the noun and the stative form of the predicate in the construction *ina ṭ/tuppim ṭuppû* 'to be assigned in a document', and considering the lexical distribution of the sign *ṭú* in Table 11, one might wonder whether, regardless of its real etymology, the articulation and/or the subsequent spelling of the verb in its stative form could have been reanalysed, influenced by the articulation and/or the spelling of the noun *ṭ/tuppum*, into a form with 'non-emphatic' initial consonant, at least for some speakers or writers, including Lu-Ninurta.

All the syllabic spellings of the term *ṭ/tuppum* in ACCOB have been analysed thus far. In what follows, instances from Old Babylonian letters that are not included in ACCOB will be also examined. Table 16 shows that OB letters from the AbB collection (not included in ACCOB) as well as OB texts from CUSAS 15 also replicate the exclusive use of the sign TU when the lexeme *ṭ/tuppum* 'tablet' is rendered syllabically.

[162] Lieberman 1976, 14, note 32.

Table 16: Syllabic writing for ṭ/tuppum *in OB letters from AbB (not included in ACCOB) and in CUSAS 15*[163].

N.	Form	Sender	Letter
19	***ṭú**-up-pi*	Ṣilli-Irra	CUSAS 15, 116:8
20	***tu**-up-pi*	Hammurabi-hazir	AbB 1, 44:4
21	***tu**-up-pi*	Enlil-abum	AbB 9, 16:14
22	***ṭú**-up-pa* (*but *li-ba-al-li-**ṭù**-ú-ka)*	Šamaš-naṣir	AbB 2, 142:11'
23	***ṭú**-up-pa* (*ṭú* in other instances too)	Awil-ili	AbB 14, 84:12
24	***ṭú**-up-pa-ti-ia*	Ilima-DINGIR	AbB 14, 73:6
25	***ṭú**-up-**pi***	Aplum	AbB 14, 177:12
26	**[ṭ]*ú**-up-pí-im* (*ṭú* in another instance)	Ili-imiti	AbB 6, 144:14
27	***ṭú**-pí*-KA (*ṭú* in another instance)	Bel mukaširi	AbB 6, 111:21
28	***ṭú**-pa-am* (*ṭú* in another instance)	Bunanušu	AbB 14, 27:9

The evidence from OB letters therefore, supports the assumption that, at least for the attested scribes of letters in the OB period, the onset phoneme of the term *ṭ/tuppum* was articulated in a way more similar to the stop consonant /t/ than to its 'emphatic' counterpart /ṭ/. The same conclusion is reached by Streck (2009). It should be noticed that, in assessing the relevance of the occurrence of TU for *tuppum* in OB texts, Streck considers also significant to note whether the same letter contains other signs form the D-series, apart from DU. However, as was discussed in previous sections, the signs DA and DI for /ṭa/ and /ṭi/ do not necessarily correlate with the spelling *ṭù* (DU) (see section 3.3.5.2.2).

The term for 'tablet' in the OB letters of the corpus will be henceforth considered to be *tuppum*, a decision which would affect the distribution of the variable (ṭú,ṭù) presented in Table 11 above, especially for letters belonging to the southern-related group in the classification of texts in the ACCOB corpus.

3.3.4.1.3 Senders from southern-related sites with both TU and DU signs.

As shown above, the OB letters of the corpus sent by Lu-Ninurta, although included in the group of southern-related texts, display both types of spellings for the variable (ṭú,ṭù). Even if one excludes the forms for the noun *tuppum* and the predicate *tuppûm*, four instances of the sign TU for /ṭu/ are found in greetings formulae and one instance elsewhere[164]. The particular socio-historical circumstances under which Lu-Ninurta sent his letters might have played an important role in the relatively high degree of internal variability of orthographic traits. A more detailed study of this type of variation will be shown in 3.4.2.1.4. Nevertheless, Lu-Ninurta is not the only 'southern' sender with variability in the use of signs DU and TU to render /ṭu/. A total of 10 more instances of the less expected spelling *ṭú* in southern texts (see Figure 12), occur in letters sent by individuals that also used the alternative variant *ṭù* elsewhere in their correspondence. The orthographic variability within letters from one individual should not be surprising: having been dispatched by the same individual is the only common characteristic that motivates the classification of letters by senders, but of course, they

[163] The sequential numbering follows up from the instances presented in Table 12.
[164] See table in section 3.4.2.1.4.

could differ in many and hardly predictable ways: from different places and times of emission the letters, to the hands of scribes with different orthographic or dialectal backgrounds. As will be discussed later, the internal variability in the use of *ṭú* or *ṭù* in southern-related senders is, however, noticeably greater than that of the senders from northern-related sites, which tend to stick to the usage of the sign TU to render /ṭu/.

To summarize the results for the analysis of variable (ṭú,ṭù) in southern-related letters, the graph in Figure 12, below, shows the number of spellings *ṭú* and *ṭù* found in southern-letters in the corpus. Colour grades have been added to distinguish:

- instances coming from early OB texts,

- instances that belong to the spelling of the predicate *ṭuppûm* (which, as it was suggested, might have had a similar consonant articulation as the noun *tuppum*),

- and the occurrences of the variable (ṭú,ṭù) found in letters from senders whose texts present at least one instance of both variants, *ṭú* and *ṭù*.

The chart in Figure 12 differs from that in Figure 11 in that it does not include the 11 occurrences of syllabic writing of the noun *tuppum* that previously fell onto the TU-sign column. As discussed earlier, the syllabically written forms of this lexeme can be more adequately transcribed with an initial non-emphatic consonant /tu/ for the OB texts in ACCOB. This change in the data results in a more pronounced difference between columns DU and TU in Figure 12, making the number of instances of the sign TU considerably smaller.

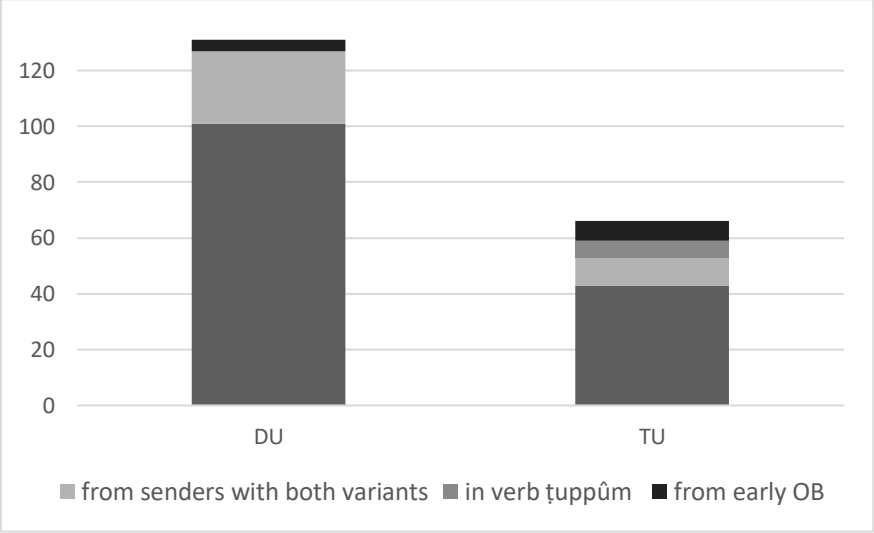

Figure 12: N. of instances of the variable (ṭú,ṭù) in southern-related letters in ACCOB.

3.3.4.2 Variation within individual letters

The existing variation attested within letters sent by one single individual may be motivated by multiple factors that we cannot always control for. However, the attention to such cases of variation in individual documents offers examples of spelling divergence in which potential causes of variability such as chronology, geography or the the input from different scribes are reduced to a minimum. Consequently, these cases give us valuable insights into the nature and the scope of the variation. For the purpose of comparing the range and type of variability in individual tablets, all texts from ACCOB (and those from AbB that were not included in ACCOB), in which at least one instance of both variants of the variable

(ṭú,ṭù) are present in the same letter have been gathered together and listed in Table 17[165]. The distribution of the variants in the table shows that most letters sharing both signs, DU and TU for /ṭu/, do it in a particular way: the sign TU is frequently used in the greeting formula *liballiṭūka* 'may [god] keep you alive' or similar expressions[166] and the sign DU elsewhere in the text.

Table 17: Letters in ACCOB and AbB with both spellings of the variable (ṭú, ṭù)[167]

N.	Letter	Sign TU	Sign DU
1	AbB 1, 59	***li-ba-al-li-ṭú-ú-ka***	*aš-ṭù-ra-am*
2	AbB 6, 125	***li-ba-al-li-ṭú-ka***	*ap-ṭù-ra-am* *lu-uṭ-ṭù-ul*
3	AbB 8, 61	***li-ba-al-li-ṭú-ka***	*ṭù-ur-dam-ma* *ṭù-ur-dam-ma*
4	AbB 9, 106	***li-ba-al-li-ṭú-ka***	*ṭù-ur-da-am-ma*
5	AbB 12, 186	***li-ba-al-li-ṭú-ka***	***l*[i-ba-al-l]*i-ṭù-ka***
6	AbB 14, 85	***ú-ba-li-ṭú-šu*** **[l]*i-ba-li-ṭú-ka***	*ṭù-ur-da-am-ma*
7	AbB 10, 15	***li-ba-li-ṭú-ka*** *im-ta-ṭú-ú*	*hi-ṭù-um*
8	AbB 10, 16	***li-ba-li-ṭú-ka***	*hi-ṭù-um*
9	AbB 11, 160	***li-ba-al-li-ṭú-ka***	*ṭù*-[u]*r*-[dam]
10	AbB 9, 48	***li-b*[a]-*a*[l]-*li-ṭú-ki***	*ṭù-uh-hi-šu-ma*
11	AbB 8, 158	***li-ba-al-li-ṭú-ka*** *ṭú-ur-da-aš-šu-ú-ma*	*na-ṭù-ú-ma*
12	AbB 11, 7	***li-ba-li-ṭú-ka***	*ip-ṭù-ur-ma*
13	AbB 11, 168	***li-ba-al-li-ṭú-ka***	*ṭù-ur-dam-ma*
14	AbB 9, 129	***li-ba-al-li-ṭú-ka***	***ú-ba-al-li-ṭù-ú-šu***
15	Edubba 7, 126	*ṭú-ur-da-nim-ma*	***li-ba-li-ṭù-ki-na-ti***
16	AbB 9, 58	*ṭú-ur-da-aš-šu*	*na*-DU-*ú*

The preference for the sign TU in the writing of the predicate *balāṭum* 'to live' in letters that employ the sign DU to render /ṭu/ in other contexts may not be the product of a random distribution. Several reasons can be put in relation to the choice of one or the other variant in one text, including psycholinguistic factors, physical condition of the tablets or phonological nuances of some lexical terms. One could even point to a phonetic distinction as the origin of the written differentiation of both variants, by which words like *liballiṭūka* or similar expressions could have had distinctive articulatory features for some speakers of Old Babylonian compared to other instances of the segment /ṭu/. However, we can find examples in which the variation occurs in the same predicate *balāṭum* (e.g. instances five and 14 from Table 17). The occurrence of *ṭú* and *ṭù* within the same letter led Lieberman to suggest:

> It seems likely that this inconsistency [in the representation of the segment /ṭu/ with the signs TU and DU in letter CHJ p.3] results from the fact that the first-cited form is part of the (introductory) formula, while the second is in the body of the letter. (Lieberman 1976, 88, note 238).

[165] Transliterations of the noun *tuppum* are excluded.
[166] For greetings in OB letters see Sallaberger 1999, p78ff.
[167] In bold, the instances from greeting formulae.

It is well known that the practice of copying letters was a normal exercise in the education of scribes in ancient Mesopotamia (Kraus 1959, Charpin 2010). Although the textual content of letters is naturally more open and, therefore, less formulaic than the content of other types of texts such as administrative texts[168], the beginning of the letters was clearly standardised in the use of formulae such as *ana* PN *qibīma* 'to PN say'. This formula contains an archaic spelling *qí-bí-ma*, in which the sign *bí* was an orthographic fossilised remnant of an early Akkadian phonetic articulation, lost by the time OB letters were composed[169]. To a lesser extent, other parts of letters, particularly greeting formulae, were also cross-regionally repeated with high frequency (see Sallaberger 1999), which makes the spelling of these constructions potentially more adequate to be the object of cultural transmission detached from whichever distinctive articulatory oral features they could bear in different communities. In other words, the idiosyncratic sections of the texts that are less related to the oral message and more associated with widely established patterns, must have been more easily repeated and practised by those who learnt the intricacies of drafting OB letters. This does not mean that the expression *liballiṭūka* or similar forms of the predicate *balāṭum* were universally written with the sign TU by well-educated OB scribes. In fact, examples abound of the sign DU used in the spelling of the greeting formula in southern OB texts, which coherently employ the sign DU for /ṭu/ also outside the formula, reflecting a particular writing custom of southern areas. However, the distribution of the variable (ṭú,ṭù) in data from the corpus suggests that, first, only a comparatively reduced number of OB scribes would have had a repertoire of two different signs to render the syllable /ṭu/; and second, that the reason why in such cases one of the variants (*ṭú*) appears often only in the greeting formulae, may be related to a repeated established practice of copying greeting formulae in the process of acquiring writing skills. At the same time, the variation between *ṭú* and *ṭù* in Table 17 is not exclusively confined to greeting formulae (see e.g. numbers 7, 11 and 16). There is even a counterexample on the data (Edubba 7, 126) where it is the sign DU (*ṭù*) the grapheme that appears in the greeting formula whereas the sign TU is used for the verb *ṭarādum* in the core text of the letter. This suggests that supra-linguistic factors related to the acquisition of literacy could have influenced the spelling of greeting formulae as opposed to other parts of the text in some scribes, but were not universally established in the whole OB territory as prescriptive writing rules in the modern sense of orthographic normativization.

3.3.4.3 Letters categorised as 'northern' but featuring the sign DU for /ṭu/

After the analysis of the group of southern-related letters in ACCOB that differ from other southern-related letters for including the variant spelling *ṭú*, the present sub-section examines the opposite case: the instances of *ṭù* (DU) in letters that are classified as northern-related in the corpus.

The most immediate observation from the general distribution of the variable (ṭú,ṭù) is that variation within the northern group is less frequent than variation in southern letters: only 17 instances of *ṭù* were found in northern-related letters against more than 500 cases of the variant *ṭú*. Due to their low frequency in northern areas the letters containing the spelling *ṭù* are interesting cases of analysis:

[168] For models of contracts in OB see Spada 2011.

[169] The sign *bí* is otherwise hardly attested anywhere else in the content of OB letters. Even when the same imperative form of the verb 'say' *qibīma* is needed, it is normally written *qí-bi-ma*. See also Lieberman 1976, 88-89, note 241.

- Two instances of *ṭù* outside southern-related letters in ACCOB, if correctly read, belong to two letters from the Diyala region: the first one is found in an early OB letter from the time of Ur-Ninmar (*ṭù*-[ú]*r-dam* AS 22, 32:28). The second one, from the reign of Ibal-pi-El II (*ṭù-ḫi-ni-ma*, Sumer 14, 4:35), constitutes the only case of *ṭù* in the transliterations from letters related to the Diyala region in ACCOB after the early OB period.

- Two instances occur in broken contexts: *ʿṭùˀ-ub* (MHET 1/1 92:18) and *ni-iš-ṭù*-[…] (AbB 5, 86:3').

- Four instances of *ṭù* in northern letters occur along other southern orthographic features:
    - *ú-ṭù-um* (AbB 8, 46:12) belongs to the group of letters from Sippar sent by Atahzum (see Sommerfeld AfO 29, 91). The employ in the same letter and in another letter from the same sender of the typically southern orthographic variant *pi* (instead of the most frequent alternative *pí*, see section 3.4.2), and the mention in the letters of the site of Nippur (AbB 8, 46) and Maškan-šapir (AbB 8, 122), suggest that perhaps the scribe of the letter or the place of emission could have been related to a site in central/southern Mesopotamia.
    - *li-ba-a*[l]-*li-ṭù-ú-ka* (AbB 5, 218:5) belongs to a letter found in Sippar and sent by Awil-Adad. The spelling *aš-šum-ia* 'for my sake' in the same letter is also characteristic of southern-related letters in ACCOB (see section 3.7).
    - *li-ba-al-li-ṭù-ka* (Edubba 7, 77:4) belongs to a letter from an archive in Sippar, and shares the same characteristics as the letter commented above: sign *ṭù* in the greeting formula and typically southern spelling of the form *aš-šum-ia*.
    - *li-ba-al-l*[i]-*ṭù-ku-nu-ti* (AbB 6, 185:5) belongs to a letter sent by a *santana* called Lumur-ša-Marduk to two supervisors of gardeners in the Lower Yahrurum. At least one of his letters (AbB 14, 97) seems to have been sent from a place called Girsu, although Charpin and Veenhof doubt that this place was the well-known southern city of Girsu, modern Tello [170]. It should be noticed, however, that other features included in the letters produced by this individual are not characteristic or exclusive from southern-related texts[171].

- The rest of the letters from northern-related sites that include the sign DU for /ṭu/, 9 instances in total[172], belong to senders related to the sites of Kiš and Sippar. Interestingly, the letters from these senders contain variation with respect to the variable (ṭú,ṭù): besides *ṭù*, their correspondence includes at least one instance of the alternative spelling *ṭú*. Such internal variation within the

[170] See Charpin 1981, 523f., AbB 14 p.89.
[171] E.g., the sign *pí* (see section 3.4.2) or the use of S-signs for double consonant /s/ (see section 4.2.2).
[172] *na-ṭù-ú-ma* (AbB 8, 158:8'); *ni-ip-ṭ*[ù-ra]-*a*[m] (AbB 9, 28:14); *na-ṭù-ú* (AbB 9, 58:9); *li-ba-al-li-ṭù-ka* (AbB 9, 142:4); *li-ba-al-li-ṭù-ka* (AbB 10, 8:4; this letter contains further elements that occur more frequently in southern-related letters such as the nasalization of double stop consonant [see chapter 5], and the use of S-signs for the spelling of the term šittum [see section 4.2.2.6]); *hi-ṭù-um* (AbB 10, 15:32 and AbB 10,16:13': it should be noticed that this letter has already been commented in section 3.3.3 for including the spelling *ṭe* (DI)); *ṭù-ur-da-aš-šu* (AbB 10, 77:25) and *li-ba-li-ṭù-ki-na-ʿtiˀ* (Edubba 7, 126:6).

group of letters sent by one individual is proportionally more infrequent in northern-related letters compared to southern-related letters (see Figure 13 below).

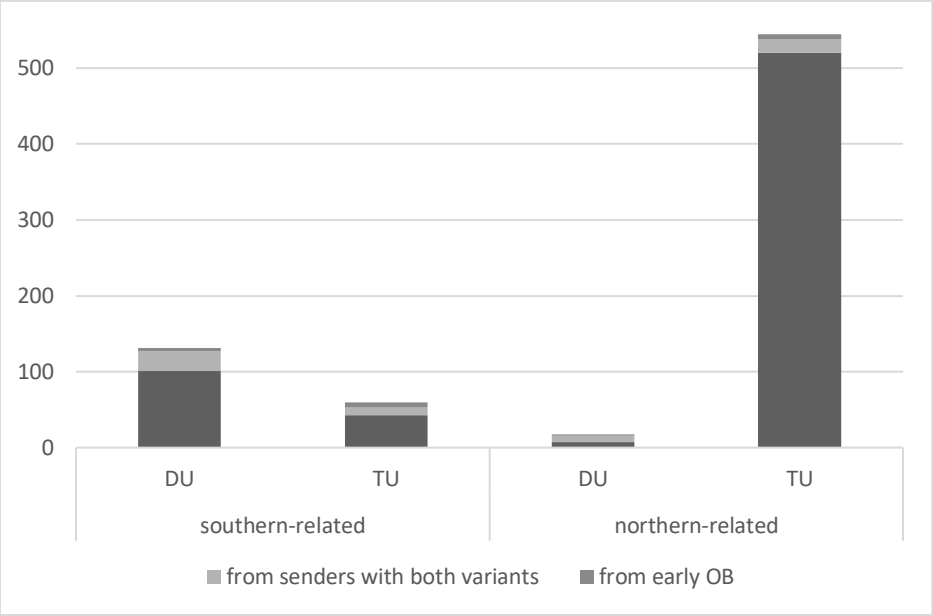

Figure 13: Number of instances of the variable (ṭú,ṭù) in southern-related texts (left) and northern-related letters (right) in ACCOB

The figure above demonstrates a strong correlation between northern-related letters and the orthographic variant *ṭú* (sign TU), as predicted by Goetze (1945) and widely assumed in assyriological scholarship. Thus, the few cases of the spelling *ṭù* (sign DU) in letters categorized into the northern group, either present other southern features (which raise the question of their relation to northern areas), or belong to senders whose letters vary in the choice of variable (ṭú,ṭù). In comparison to the southern-related letters in ACCOB, senders from the North are notably more consistent in the use of only one of the variants (in this case *ṭú*) in their correspondence.

Correspondingly, the sign DU for /ṭu/ appears associated to southern-related letters, which on the other hand, seem to be less unambiguously characterized by only one variant. While it is true that most occurrences of the sign DU rendering the segment /ṭu/ occur in letters related to southern Mesopotamian areas[173], the reciprocal assumption that southern texts should employ *ṭù* is not so straightforwardly attested in OB letters from ACCOB. It can indeed be observed in Figure 13 (left column), that the variant *ṭù* is more frequent in southern-related letters, but at the same time many counterexamples exist where *ṭú* is used instead. Most of these counterexamples (as many as 43 cases out of the total 60 instances of *ṭú* in southern-related letters) appear in greeting formulae such as *liballiṭūka* 'may [god] keep you alive', whose spelling, as discussed in 3.3.4.2, might have been influenced by the spread of determined models of scribal practice. Nonetheless, the alternative spelling *ṭù* is also well attested in greeting formulae, mostly, but not exclusively[174] in southern-related letters. Furthermore, the spelling *ṭù* for greeting formulae occurs also in texts considered to

[173] As observed for mathematical texts in Goetze 1945 and for OB texts in general in Von Soden and Röllig 1991 and passim.

[174] Same instances of *ṭù* in formulae from letters not related to southern sites in ACCOB were discussed above: Edubba 7, 77:4 and AbB 6, 185:5.

be school letters, such as AbB 11, 54:5, AbB 11, 170:5 and AbB 11, 179:5[175]. This points to a not uniform nor prescriptive way to render the syllabic cluster /ṭu/ in greeting formulae for the whole OB record, despite the cases where the 'northern' sign TU (*ṭú*) appears in southern salutations from letters that otherwise employ the sign DU for the same segment /ṭu/. In this regard, it should be noted too, that southern letters are quantitatively underrepresented in ACCOB (as well as in the collection of letters AbB), and they cover a more limited time span than northern letters. Social and political circumstances surrounding the context of writing for these southern letters, also more chronologically restricted, might be important to understand the difference in internal variability for this groups in comparison with the northern-related group of letters. Moreover, most of the southern letters in ACCOB were written in a time when the kingdom of Larsa was already under Babylonian (northern) rule, which might also be pointed out as a potential factor of influence or spread of certain orthographic practices over others.

3.3.5 The orthography of CV syllables with consonant /ṭ/ in OB letters

3.3.5.1 Chronological constraints

It has been observed that early OB letters, albeit scarcely represented in the corpus, differ in their representation of distributional patterns for CV-sign variables with respect to the rest of OB data from ACCOB. In contrast to the general preference for D-signs to render the syllabic clusters /ṭa/ and /ṭi/ in the corpus of OB correspondence, letters from the early OB subgroup (purportedly from a time prior to the reigns of Rim-Sin of Larsa and Sin-muballiṭ of Babylon), present a higher frequency of T-signs independently of their geographical origin. In fact, most of the instances of T-signs that are shown in Figure 14, below, belong to the group of letters related to southern Mesopotamian enclaves[176].

However, it should be remembered that the group of early OB letters in ACCOB, whose occurrences are displayed in Figure 14, cover a much narrower diversity of geographical origins than, for example, later letters from the time of Hammurabi. Moreover, the number of instances for the variables is too small to be compared to the subsequent period of Old Babylonian. An additional factor that might contribute to a biased view of the earlier data in comparison with later records of OB is that some of the archives that provided a significant part of the early OB documents in ACCOB, such as Lagaš and Kisurra, are barely represented for later periods in the corpus. Therefore, it could be argued that the preference for T-signs in these sites was a local characteristic of said archives more than a chronological particularity of early OB letters in general.

[175] For the assumption that these letters were school exercises see Stol 1985 (AbB 11), 110 note 170a and 114 note 179[a].

[176] Seven occurrences belong to letters from the archive of Kisurra: FAOS 2, 153:31; FAOS 2, 154:18 and 30; FAOS 2, 174:9; FAOS 2, 178:19 and 43; Santag 9, 185. Six belong to the archive from Lagaš: AbB 9, 226:6; AbB 9, 226:12; AbB 9, 232:22; AbB 9, 251:10'; AbB 9, 267:19; AbB 9, 262, 24. Six come from the area of Larsa: TCVP III, 5:11 (but cf. *ba-al-ṭa-am* in TCVP III 5:8 in a letter also related to Larsa); TCVP III, 9:8; TCVP III 9:17; TCVP III 10:9; 21 and 22. Finally, six instances come from the letters sent by Ahum, related to either Umma or Kisurra (see Veenhof 2005, AbB 14, xxii): AbB 2, 128:8'; AbB 13, 54:7 and 9; AbB 13, 56:15'; AbB 13, 58:30 and AbB 14, 211:14.

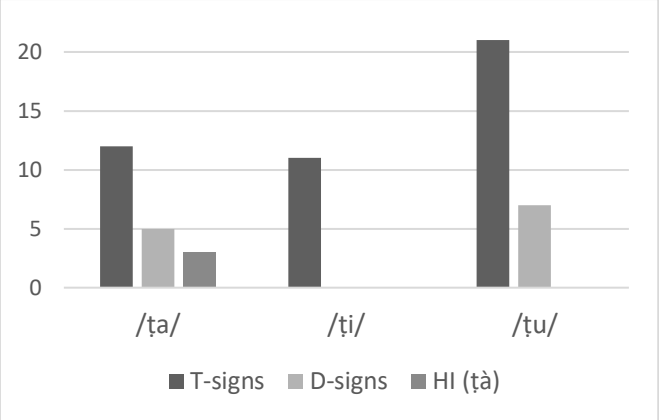

Figure 14: Instances of CV-signs representing /ṭa/, /ṭi/ and /ṭu/ in early OB letters in ACCOB.

On the other hand, at least six of the D-signs from the columns /ṭa/ and /ṭu/ in Figure 14, i.e. half of the cases, come from letters whose identification with the early OB is doubtful[177]. Since the number of occurrences for all the variables in the subgroup of early OB letters is small, any minor changes in the categorization of the letters or emendations in their transliterations could modify the ratio of data significantly, and therefore, despite the apparent prominence of T-signs for early OB letters, generalizations cannot be safely made.

Nonetheless, the early OB data presented in Figure 14 do not support the geographical division of spellings with D-signs in southern areas and T-signs in northern areas proposed by Goetze (1945) for mathematical texts and endorsed partly in later scholarship[178].

3.3.5.2 Regional correlations

The selection of spelling variants to represent CV syllables with the consonant /ṭ/ correlates with regional variables in the analysis of OB letters in ACCOB. However, the general North-South division for the orthography of D-signs and T-signs, particularly for the segment /ṭa/, is not supported in the OB letters from the corpus. The broad division of OB texts into three geographical areas: Diyala region, southern region and northern region returns, however, distinctive practices in the use of orthographic variables.

3.3.5.2.1 The Diyala region

[177] One of the occurrences of *ṭa* and three of the occurrences of *ṭù* are found in letters AbB 5, 171 and 172, whose preliminary classification in the early OB group is only based on their epigraphic description as 'ältere Schrift' by Kraus (1972). Similarly, another instance of *ṭa* (AbB 14, 128:15) belongs to a letter where 'The forms of the signs IM, MA and KA are 'archaic'' (Veenhof 2005 [AbB 14], 118, note 128a). Finally, the spelling *ṭù* (sign DU) occurs also in LAOS 1, 46, a document whose dating has not been agreed upon: W. Sallaberger proposes 'späten Jahren Hammurapis bis Samsu-iluna 11' based on the gods mentioned in the greeting formula (Sallaberger 2011 [LAOS 1]). D. Charpin on the other hand, suggests: 'Je ne vois pas en quoi cette bénédiction par Šamaš et Ištar permet de dater la lettre des « späten Jahren Hammurapis bis Samsu-iluna 11» […] Bien des aspects (graphie, extrême concision, etc.) me semblent plus anciens' (Published on the website Archibab: http://www.archibab.fr/4DCGI/listestextes3.htm?WebUniqueID=810694, [accessed 30.04.2017]).

[178] See, e.g., Walters 1970 (Water for Larsa) about the archive of Lu-igisa: 'The archive follows mixed conventions for writing the consonant ṭ. […] The orthography TA, TE, TI is northern; DU is southern.' (Walters 1970, xxi).

The letters related to the Diyala region included in ACCOB show a clear preference for the signs HI, TI and TU, particularly if only middle OB texts are considered in the survey:

- /ṭa/ is written with the sign HI (*ṭà*) in 19 occasions (see 3.3.1.2), whereas TA (*ṭá*) is only found in early letters[179]. As for the sign DA (*ṭa*), it occurs two times (apart from personal names): in JCS 24, 74:14 and, in a broken form *ṭa*-[*b*]*u-um-m*[*a*], in Sumer 13, 109, a document that includes two letters in the same tablet that have been described as 'literary texts' (Wu 1994, 77).
- /ṭi/ appears consistently written with the sign TI (ṭì) [180], but the number of tokens only sum up to a total of six instances if we exclude early OB texts[181].
- /ṭu/ is represented only once with the sign DU in the form *ṭù-ḫi-ni-ma* (Sumer 14, 4:35), against the most frequent spelling with the sign TU, which occurs 26 times.

3.3.5.2.2 The North-South division

From the results presented in this chapter, it can be concluded that some orthographic variants relate more clearly with geographical variants than others. The sign DU to render /ṭu/ occurs unequivocally more often in letters related to southern regions. In a similar way, 36 of a total of 42 instances of DI (*ṭe*) for the lexeme *ṭēmum* in ACCOB occur also in texts associated with southern locations. The sign TA rendering /ṭa/ on the other hand, is more common in northern letters, especially in the letters from King Hammurabi, and from areas around Babylon. All these three observations from OB letters support, in principle, the basic North-South differentiation in Goetze (1945) and passim about the employment of T- and D-signs for CV signs denoting the consonant /ṭ/.

Nevertheless, the correlation between these signs and the areas where they are normally found cannot always be reversed to claim that certain territories idiosyncratically display only one of the variants under study. This lack of reciprocity can be illustrated by the distribution of the variable (ṭe,ṭe$_4$): whilst the sign *ṭe* occurs clearly more often in southern texts than in any other regions attested in ACCOB, the more widespread spelling for the segment /ṭe/ in southern areas is, however, the variant *ṭe$_4$*, which is particularly prominent in OB letters related to Uruk (see Figure 9).

In this sense, it should be clarified that the North-South distribution of orthographic spellings to render emphatic syllables in OB letters differ for every variable. Figure 15, below, exemplifies the position of DA, DI, DU, TA, TI, TU variant signs studied in this chapter with respect to a percentage axis[182].

[179] Also in a personal name (Semitica 58 5:2). Personal and geographical names are, however, not included in any of the studies of the present research project.
[180] Note that the reconstructed transliterations *š*[*a-ha-ṭi-im*] and *ah*-[*bu-ṭù*] in a letter from Ibal-pi-El II (Fs. Garelli, 147-159) are uncertain and have not been considered in the survey.
[181] Two occurrences excluded from the account belong to OBTIV 4, a letter assumed to predate the middle OB period: '[its] time [...] fits with the reign of Sin-abušu [...] must have preceded the sequence of rulers at Ešnunna and Ishchali' (Greengus, 1986 [BiMes 19], 5).
[182] Instances from the Diyala region, already presented in 3.3.5.2.1 are not included in Figure 15. Early OB occurrences, due to their idiosyncratic orthography are likewise not part of the percentages shown in the graph.

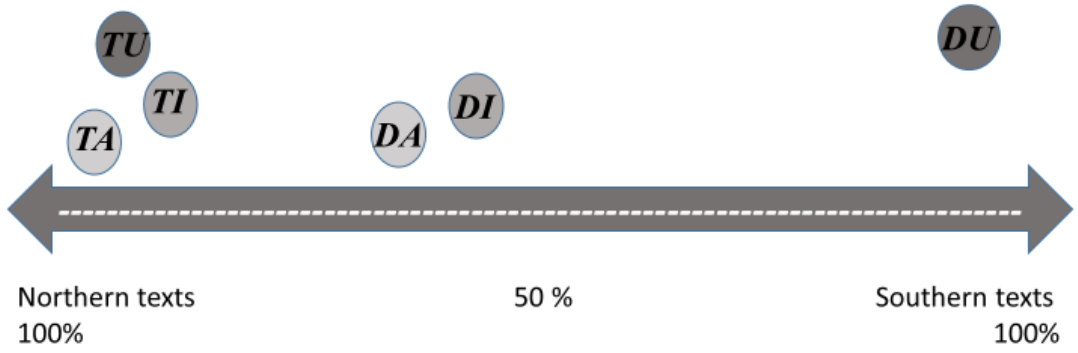

Figure 15: Relative proportion of total number of instances of variables of CV signs for /ṭ/ that occur associated to northern- and southern-related texts in ACCOB.

The graphic shows the six variables for the representation of the segments /ṭa/, /ṭi/ and /ṭu/ with either T- or D-signs, placed on a scale that corresponds to the percentage of their instances as they occur in either northern- or southern-related middle OB letters in ACCOB[183]. A central position on the line, such as the one occupied by the sign DI, means that a spelling like *ṭi* is found almost as many times in northern letters (56,9 % of the cases) as in southern letters (53,1% of the cases). At the other side of the spectrum, the spelling *ṭá* (TA) is found in 37 instances from northern letters against only 3 instances in southern letters. The figure reveals therefore, not a detailed description of regional orthographic patterns, but a mere account of the origin of the letters where an orthographic variant occurs. One cannot, for example, conclude from this data that northern letters are characterized by the sign TA to render /ṭa/ in middle OB letters. Rather the graphic reads that when the spelling *ṭá* (TA) occurs in middle OB letters from our corpus, it does so predominantly in texts that have been related to northern areas. In fact, if one examines the instances of the variable (ṭa,ṭá) in the group of northern letters, it becomes clear that *ṭa* (DA) is employed almost three times more often than *ṭá* (TA)[184]. This apparent contradiction is explained by the fact that the indicators in Figure 15 are based on a disparate amount of evidence for every variant: whilst the sign TA is attested a total of 40 times (most of them in northern letters), the sign DA occurs more than 150 times in the letters analysed (63% of them in northern-related texts). The account of variants with small number of occurrences, such as TA and TI is, therefore, more susceptible to be biased by the poor representativeness of the sample. In this respect, it should be stressed again that the source of the data is not a balanced sample with equal amount of texts from northern and southern locations. The fact that northern letters are more numerous in ACCOB necessarily implies that some features that could be equally common in both areas are, as a matter of fact, more attested in northern regions due to the larger quantity of northern texts, resulting in the sign appearing closer to northern end of the scale rather that around a middle position.

As discussed previously, some signs bear a more unequivocal association with regional variables. The clearest relation appears to affect the distribution of the signs TU and DU to render /ṭu/, as has been observed by scholars and widely accepted in the literature. The signs TI and TA are less conclusively connected to geographical regions in middle OB

[183] Excluded from the account are, therefore, all early OB instances as well as instances from letters from the Diyala region.
[184] DA for /ṭa/ occurs as many as 104 times, for only 37 instances of TA in this group of letters.

letters (but see 3.3.5.1 for their distribution in early OB texts) on account of their fewer instances in the corpus. On the other hand, the signs DA and DI, assumed to represent distinctive orthographic features of southern regions in Goetze 1945 and Von Soden and Röllig 1991 (only for the sign DI) also occur frequently in northern texts.

At the level of the individual senders, the orthographic variables employed in the letters sent by one informant vary in their combination of signs to denote the segments /ṭa/, /ṭi/ and /ṭu/. Table 18, below, shows a list of those senders included in ACCOB whose letters contain at least one instance of the three syllables above mentioned. On the right column we find the orthographic paradigm used in their representation of /ṭ/ in CV signs. In cases where more than one form is used to represent one of the clusters, e.g. TI and DI for /ṭi/, only the variant most frequently employed is shown.

Table 18: Senders in ACCOB whose letters include instances of all clusters /ṭa/, /ṭi/ and /ṭu/.

N.	Sender	Period	Location related	CV signs for /ṭ/
1	Ilšu-ellatsu	unspecified	Ur	**DA-DI-DU**
2	Šep-Sin	Ha	Larsa	**DA-DI-DU**
3	Atahzum	Ha	South? Sippar?[185]	**DA-DI-DU**
4	Iddin-Šamaš	Sd	Babylon	**DA-DI-TU**
5	Ili-iqišam	Ad	Sippar?	**DA-DI-TU**
6	Ipqu-Annunitum	late	Sippar	**DA-DI-TU**
7	Marduk-naṣir	Si	Lagaba	**DA-DI-TU**
8	Munawwirum	unspecified	Kiš?	**DA-DI-TU**
9	Belšunu	Si	Lagaba	**DA-DI-TU**
10	Etel-pi-Marduk	unspecified	Kiš	**DA-DI-TU**
11	Ninsianna-mansum	Si	Lagaba	**DA-TI-TU**
12	Tariša	unspecified	Sippar? Ašur?	**DA-TI-TU**
13	Belšunu II	Si	Lagaba	**DA-TI-TU**
14	Sin-šemi	Ha? Si?	Sippar	**HI-DI-TU**
15	Iluni	Si	Ešnunna	**HI-TI-TU**
16	Ibni-šadum	early	Kisurra	**TA-TI-TU**
17	Hammurabi	Ha	Babylon	**TA-TI-TU**
18	Ahum	Sum-ab	Umma? Kisurra?	**TA-TI-TU**

The table reveals that, contrary to what could be expected from the general division of T- and D-signs proposed in Goetze 1945, the most frequent way to render the series /ṭa/, /ṭi/, /ṭu/ is by a mixed usage of T- and D-signs, at least for northern areas in middle and late OB letters.

Consistent usage or D-signs only occur, however, in two southern senders and in one sender whose texts display other southern features like the form *pi*[186]. T-signs for the three segments are found in early OB letters from Kisurra and/or Umma (cf. the preference for T-signs in early OB letters in 3.3.5.1) and in the letters sent by Hammurabi of Babylon, the best attested individual group of OB letters in the corpus. The group of letters sent by King

[185] See the comments in 3.3.4.2 about the southern orthographic features of the letters sent by Atahzum, despite their initial classification in the group of letters related to Sippar.
[186] See note above.

Hammurabi is also the most extensively studied and best-known corpus of OB letters, a fact that might have influenced the mainstream perception on OB orthographic patterns. It is also interesting to note the widespread usage of the sign TU for /ṭu/, which occurs in the letters from all senders except for the southern group, and often appears along with D-signs in scribal systems to render CV clusters with the consonant /ṭ/[187].

The number of senders whose correspondence include instances of the three clusters /ṭa/, /ṭi/ and /ṭu/ is nevertheless limited by the comparatively few instances of /ṭi/ in ACCOB. To contribute with more data to the picture of individual orthographic patterns in OB letters, Table 19 adds data from senders in the corpus (excluding those already presented in Table 18) whose letters contain at least two instances of the segments /ṭa/ and /ṭu/.

Table 19: Senders in ACCOB whose letters contain two or more instances of /ṭa/ and /ṭu/ (excluded those in Table 18)[188].

N.	Sender	Period	Location related	CV signs for /ṭ/
1	Awil-Šamaš	RS	Larsa?	**DA-DU**
2	Ṣilli-Šamaš	RS	Larsa	**DA-DU**
3	Šamaš-hazir	unspecified	Kiš	**DA-DU/TU**
4	Alammuš-naṣir	Si	Sippar	**DA-TU**
5	Awil-Adad	As	Sippar	**DA-TU**
6	Ikun-pi-Marduk	unspecified	Kiš?	**DA-TU**
7	Ilabrat-palil	unspecified	Adab	**DA-TU**
8	Ili-iribam	As	Sippar	**DA-TU**
9	Nabium-naṣir	As	Babylon	**DA-TU**
10	Šumum-libši	As	Sippar	**DA-TU**
11	Sin-nadin-šumi II	As	Sippar?	**DA-TU**
12	Šamaš-naṣir II	Si	Sippar	**HI-TU**
13	Irra-bani	early	Lagaš	**TA-TU/DU**
14	Mut-hadqim et al.	Ha	Babylon	**DA/TA-TU**

It can be observed that the general spelling pattern shown previously in Table 18 is similar to the one in Table 19: D-signs appear in letters from southern senders; the alternation DA-TU is well attested in northern letters (particularly for late OB) and occurrences of TA alongside TU characterize one early OB sender and a group of letters sent by Babylonian generals of King Hammurabi[189]. It should be stressed that variation occurs also within individual letters or within the correspondence from individual senders. The choice of presenting only the most attested signs, i.e. the syllabic system chiefly used in such letters, in Table 18 and 19, although it overlooks interesting deviances, it also reveals general orthographic trends in OB letters.

A series of scribal cuneiform tablets of writing practice have been preserved, containing copying exercises presumably used by learners to train and develop their writing skills. The

[187] It cannot be discarded that this uneven distribution could also be motivated by phonetic causes such as the articulation of the accompanying vowel [u]. The lack of a reliable phonetic description of the characteristics of the phoneme /ṭ/ prevents a satisfactory examination of possible phonetic motivations for the variables studied in the present section.

[188] Two alternative spellings separated by [/] represent cases of individuals whose letters include the same number of instances for both signs.

[189] See Joannès 2002.

OB sign exercise tablets called TU-TA-TI, in which ancient Mesopotamian scribes practised their writing of the cuneiform syllabary by repeating series of syllables alternating the three vocalic values /u/, /a/, /i/ (*tu, ta, ti, nu, na, ni* etc.), do not show, as far as the extant manuscripts analysed are concerned[190], sequences of syllables reflecting the widespread use of mixed D- and T-signs to represent the series of segments that are usually called emphatic stops syllables /ṭu/, /ṭa/, /ṭi/. Such clusters might not have been included in the lists at all (see Veldhuis 1996, 44), but sequences of 'emphatic' dentals might also have been subsumed in a different reading of the strings TU-TA-TI or DU-DA-DI, characteristic of the writing habits from particular schools. Since most of the TU-TA-TI practice tablets originate from the southern site of Nippur, it is possible that the representation of *ṭ*-syllables was already incorporated in the D-sign series and therefore did not require a separate list entry. Nevertheless, there have not been found any sequences of syllable signs blending D-signs with T-signs even though at least some of the TU-TA-TI exercise tablets seem to have been used to practise writing Akkadian, as it is suggested by a few texts that include Akkadian words and phrases in sequences such as *a*; *na*; *ša*; *ši*; *im*; *a-na ša-ši-im* 'to him/her'[191]. In any case, due to the different rendering of the so-called 'emphatic syllables' by different scribes or genres, the question remains as to what extent the practice syllabaries that we know addressed the phonemic inventory of the Old Babylonian language; and to what extent these writing models were followed in different areas, periods or documental genres within Old Babylonian[192].

In conclusion, Chapter 3.3 has presented a detailed account of the representation of CV clusters of consonant /ṭ/ in a corpus of OB letters. Despite a number of exceptions, some of them probably related to unsurmountable pitfalls in the methods of classification of the texts and to the flexible and seemingly non-prescriptive nature of the data, a relevant correlation between orthographic variants and general geographical and chronological variables has been confirmed. The spelling paradigm for CV signs denoting consonant /ṭ/, however, differs in certain ways from the general orthographic account given i.a. by Goetze (1945) and frequently held unnuanced in assyriological literature.

3.4 The spelling of the voiceless labial stop syllables

The variation in the form of representing the CV clusters with consonant /ṭ/ in written Old Babylonian has been related to the fact that Akkadian speakers borrowed and adapted their writing principles and forms from the Sumerian writing system. Since the Sumerian phonograms did not entail any straightforward representation of the so-called 'emphatic' phonemes (non-existing in the Sumerian language), scribes of Akkadian employed different signs, i.e., signs for voiced and voiceless dental stops, to render CV-syllables

[190] CBS 06470; CBS 06797; CBS 06892; CBS 06936; CBS 06986a; CBS 06999; CBS 14096; CBS 15056; CBS 15057; CBS 15060; EEN 317; N 4977; EEN 31; EEN 321; CBS 06686; HS 1691; HS 1723; HS 1827; HS 1867 + HS 1868; N 4646; N 5055; N 5235; N 5247; N 5459; N 5837; N 5939; N 6105; N 6109; N 6114; N 6133; N 6134; N 6216; N 6241; PARS 12/01, 084; PARS 12/01, 143; PBS 11/1 035; PBS 11/2, 036; PBS 11/2, 066; SLT 022; SLT 126; SLT 129; SLT 136; SLT 199; TIM 09, 085; UM 29-13-442; UM 29-13-447; UM 29-15-582; UM 29-16-554; UM 29-16-579; ZSN 65, N 5111. See the Digital Corpus of Cuneiform Lexical Texts (DCCLT) of the University of California, Berkeley: http://oracc.museum.upenn.edu/dcclt/intro/lexical_intro.html [accessed 01.07.2017].

[191] Veldhuis 1997, 44.

[192] Veldhuis (1997) clarifies: 'One could speculate that the text was used by some teachers, and omitted by others. Outside Nippur TU-TA-TI is rare […] This paucity of evidence outside Nippur may be partly due to chance. In Northern Babylonia a related exercise is attested' (Veldhuis 1997, 44). See also Veldhuis 2014, 147 ff.

containing the phoneme /ṭ/. This alleged ambiguity resulted in temporal and regional divergent scribal usages (Von Soden 1995 [§26b], 32).

The case of labial stop consonants was, however, different. The Sumerian writing system contained two series of CV-signs, conventionally transliterated in modern literature with the Latin *b* and *p* characters, that represented labial stops. This dichotomic system might have, in fact, reflected an aspirated versus non-aspirated articulatory feature on voiceless phonemes in Sumerian[193], however, it was applied to represent the canonical pairing of voiced and voiceless labial stops in Akkadian, albeit in different ways throughout the different periods and main dialects of the history of the language. In the Old Babylonian period, the main cases of orthographic variation in letters concern the rendering of the voiceless clusters /pa/, /pi/ and /pe/.

3.4.1 /pa/

3.4.1.1 The variable (pa,pá)

Both northern and southern texts distinguish graphically the opposition voiced-voiceless of the labial syllabic pair /ba/-/pa/, according to Goetze 1945. However, in some cases, especially in early OB letters from Ešnunna (Whiting 1987, 123), both syllables appear represented by the same sign, BA, normally transliterated as *ba* and *pá* in the literature. This writing practice, with no voiced-voiceless distinction, reflects the system used in former Sargonic Akkadian, Ur III period and in Old Assyrian texts. The early archive from Ešnunna reveals a change in the orthography of letters that took place around the beginning of the XIX century BCE and that involves, among other orthographic innovations, the use of the sign PA instead of BA to render the syllabic segment /pa/ (Whiting 1987, 5ff.).

The letters included in ACCOB present, as expected, an overwhelming use of the sign PA to render /pa/. However, a few instances of the alternative spelling *pá* (sign BA) deserve attention. Besides the 12 cases found in the older letters from the early archive of Ešnunna[194], three more instances occur in Ešnunna letters from the time of Ipiq-Adad or later (AS 22, 43:19 and 22; and AS 22, 53:8), a time in which the orthographic change mentioned above has been implemented and *pa* appears also attested in the archive. Another early instance of BA for /pa/ occurs in a letter from the early southern archive of Lu-igisa in the site of Lagaš[195].

Representing isolated cases in the later chronological stages of the corpus, are a few occurrences of the sign BA to render /pa/ that can be dated to the middle or late OB period. Four of them belong to the southern archive of Šamaš-hazir, from the time of King Hammurabi, (*pá-ni-i-a* in AbB 4, 142:7 and *na-aš*-BA-*ki-im*, *na-aš*-BA-*ku* and BA-*ni-ia* in AbB 11, 171:11, 14 and 19) and have Zinu, Šamaš-hazir's wife, as their addressee. The language of letter AbB 11, 171, in which the only three cases of the segment /pa/ are written with the sign BA, is described in Stol 1986 (AbB 11) as unusual and recalling that of AbB 4, 142 and other letters in S. D. Walters *Water for Larsa* (Stol 1986, 111, note 171a). The lack of voiced and voiceless distinction for labial stops in these letters is moreover described by Stol as 'dialectal'[196]. In the same vein, Stol (1971) concludes that we can only

[193] Jagersma 2010, 32.
[194] Most of them from the reign of Bilalama: AS 22, 4:23; AS 22, 11:26; AS 22, 13:4 and 13'; AS 22, 14:11'; AS 22, 18:4; AS 22, 20:9 and 16; AS 22, 25:5; AS 22, 27:5.AS 22, 30:23 and AS 22, 32:5.
[195] AbB 9, 260:6 transliterates *tu*-BA-*la-ah*, but translates it 'intimidate', i.e., a form of the predicate *palāhum*. For the provenience of the archive see Stol 1971 [BiOr 28], 365.
[196] 'Dialectal *b* for *p*' (Stol 1986, 110, note 171c).

assume that in the Larsa region BA (and PI) 'occasionally render normal *pa*' (Stol 1971 [BiOr 28], 366)[197].

One more letter from a southern archive is attested in ACCOB featuring the orthographic variant *pá*: UET 5, 51[198]. Due to the resemblance of its content with another letter (UET 5, 4), this tablet is considered a school exercise[199]. Indeed, lines 5-11 in UET 5, 51 have the exact same wording as lines 6-13 in UET 5, 4, and, paradoxically, the only orthographic difference is precisely the rendering of /pa/ in the word *tuppaka* 'your tablet': DUB-*pá-ka* in UET 5, 51:8 against DUB-*pa-ka* in UET 5, 4:9. If the interchangeable use of P- and B-signs in OB is the reflection of a dialectal feature in OB as suggested by Stol's comment in AbB 11, the presence of BA for expected PA in a school letter could be regarded as the result of influence of dialectal oral phonetic nuances on codified writing conventions typical of the writing practice from individuals not fully trained in the customary writing systems. Nonetheless, it cannot be firmly established that UET 5, 51 was written by an inexpert scribe on the sole basis of its content[200]. On the other hand, the attestation of signs BA for *pá* in middle OB texts is so scanty that we cannot confirm the nature of a suggested dialectal effect on writing. Thus, unrelated to the previous cases in spatial and chronological terms, there are another three instances of the sign BA rendering /pa/ in two late OB letters from archives from the city of Sippar during the reign of Ammi-ṣaduqa: *zé-eh*-BA[201] and (dug)*na-áš*-BA-*ki* (two times)[202]. Both tablets are described in MHET 1/1 as having 'fine writing', what suggests, in this case, the performance of an experienced scribe.

In summary, the few instances of the variant *pá* in the letters from ACCOB are scattered across geo-chronological coordinates, characterizing early documents from Ešnunna but emerging occasionally in middle or late OB letters from archives diversely located in Larsa, Ur and Sippar.

3.4.1.2 Sign PI (pa_{12})

A rare orthographic phenomenon in Akkadian, mostly found in a few OB letters[203], is the use of the sign PI in words where an etymological syllabic value /pa/ is expected. The conventional transliteration for the sign PI in these cases is $pa_{12.}$[204]

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[197] See also Stol 1971 [BiOr 28], 366: 'The only thing we can say is that in the Larsa region PI and BA do occasionally render normal pa'. In note 5, however, it is pointed out that: 'We can see the same ambiguity in some verbal forms of *apālum* (**not only in the Larsa region**) [Emphasis added].' (Stol 1971, 366, note 5).
[198] DUB-*pá-ka* (UET 5, 51:8).
[199] Note in Archibab http://www.archibab.fr/4DCGI/listestextes3.htm?WebUniqueID=1405772 [accessed 01.05.2017]. Apart from its content, no other indication about the shape of the tablet or the quality of its script has been expressed to support the observation in the comment.
[200] The tablet contains a short text, but there are no mistakes in it, nor does the ductus suggest insecure handwriting.
[201] MHET 1/1 70:4. Accusative of the noun *ze'pum* 'clay tag with a seal impression or a short inscription' (CAD, Z, p.86). Archive of Ur-UTU.
[202] MHET 1/1 76. For *našpakum* referred to storage jars see CAD N2, p.68
[203] Von Soden 1995, 33. See Westenholz 1997, 189ff. for an occurrence of the spelling in the literary composition Erra and Naram-Sin.
[204] See Von Soden and Röllig 1991, Borger 2004 or Labat and Malbran-Labat, 177. Stol 1971 (BiOr 28), 366 uses the previous form pa_x to refer to the same sign called here $pa_{12.}$

The precise nature of the cases of *pa₁₂* is not universally agreed upon in Akkadian scholarship. Streck's grammatical description of Old Babylonian, although noting its infrequent use, adds the value *pa₁₂* next to the sign PI in the table of CV and VC Old Babylonian signs (Streck 2014, 9). On the other hand, Borger's reference work on Mesopotamian cuneiform signs describes the value *pa₁₂* as 'difficult' and lists some of its proposed occurrences along with bibliographical information related to them (Borger 2004, 383).

Von Soden (1968 and 1995) and Von Soden and Röllig (1991) account for the occurrences of *pa₁₂* and offer an explanation for the use of the sign PI in lexical environments where a reading /pa/ is expected:

> *b* und *p* wurden nach Vokal manchmal spirantisiert als (*v*) und (*f*) gesprochen, wie die häufige Verwendung *b*-haltiger Zeichen für *w* und die Wiedergabe von *pa* durch *wa* (*fa*) in einigen aB Briefen beweist. (Von Soden 1995 [GAG, §27a], 33).

A similar idea was developed by Kienast (1960), who considers the labial value of these PI writings a [f] allophone of /p/. According to this, the seldom OB orthographic feature *pa₁₂* would be motivated by a phonetic lenition of the syllable /pa/ within certain (undetermined) communities of speakers or linguistic environments. It should be noted that the sign PI is considered to represent several segments of OB, most frequently, the clusters transliterated as *wa, we, wi* and *wu*, as well as *pi* or *pe* in southern OB regions (see section 3.4.2). In Von Soden and Röllig's reference syllabary (Von Soden and Röllig 1991), the value *pa₁₂* for PI is listed along with three examples and the straightforward phonetic comment: 'Aussprache wohl *fa'[205]. The occurrence of the sign PI in certain environments where most OB texts present PA and where a /p/ sound is etymologically expected, would be, according to this view, a graphic representation of a phonetic case of spirantization, i.e., a cross-linguistically well-known process by which stop consonants weaken to become more fricative. This process would have affected, at some point, bilabial stops in Akkadian, and in the case of the syllable /pa/, its initial stop consonant would have developed into a weakened fricative or approximant consonant [f][206]. This would have led some scribes to represent the phonetic nuance in writing by applying the phonogram for /wa/ (PI), in the lack of a proper phonogram for /fa/. The same hypothesis was already pointed by earlier scholars[207] including Goetze (1945) in a note to his article on Akkadian dialects of the OB mathematical texts (Goetze 1945, 146, note 346). It is, however, admitted in Von Soden 1995 that the scarcity of the evidence cannot establish when this spirantization of the labial stop [p] into a more fricative [f] would take place:

> Die Überlieferung erlaubt nicht, genau festzustellen, wann die spirantische Aussprache eintreten konnte und wann nicht. (Von Soden 1995 [GAG[3], §27a], 33).

Nevertheless, Stol (1971), after listing examples of PI for /pa/ in the literature, points at a certain correlation between the orthographic variant *pa₁₂*[208] and the region of Larsa:

> The only thing we can say is that in the Larsa region PI and BA do occasionally render normal *pa* (Stol 1971 [BiOr 28], 366).

[205] Von Soden and Röllig 1991, 43.
[206] Or perhaps, according to Von Soden (1968), a bilabial fricative instead of the labiodental fricative [f] (Von Soden 1968, 215).
[207] See i.a. Gelb 1961, 122f.
[208] In Stol 1971: *pa*$_x$.

The same idea, is repeated in Westenholz 1997.

Edzard (1994), however, points at possible different motivations for the use of the sign PI in AbB 9, 227 (see Table 20, below):

> D.h. entweder "spirantisiert" der Text [p(a)] grundsätzlich; oder aber der Schreiber hatte das Zeichen PA nicht ‚zur Hand'. (Edzard 1994, 13).

Considering the spread of the scribal practice of writing the sign PI for /pi/ in southern OB texts (see 3.4.2), including the region of Larsa, a correlation between the spellings *pi* and *pa₁₂* would be indeed foreseeable if it was to be assumed that both orthographic traits represent a similar phonetic weakening of an originally etymological /p/. Nevertheless, besides the geographical observation for the distribution of *pa₁₂* in Stol 1971, the role of other potentially explanatory factors for the occurrence of *pa₁₂* in OB documents, either chronological or extra-linguistic, such as the function and type of texts (e.g. scribal exercises versus royal letters), have not been accounted for in the literature thus far, and any assessment of the assumptions described above awaits further textual evidence.

Table 20 below, lists all the possible occurrences of the sign PI employed to represent a segment /pa/, found in ACCOB and in other OB letters not included in that corpus[209] along with other information and bibliographical references. The original choices for transliteration in the editions of the letters have been kept unmodified, but the sign PI has been highlighted in bold.

Table 20: List of cases of sign PI for etymologically expected /pa/ syllables in OB letters.

N.	Transliterated form	Letter	Time and location	Sources
1	*a-t*[a]-**PI**-*al*	AbB 9, 227: 6; 8; 12 and 21.	Lagaš? Larsa? Sumu-El of Larsa	Stol 1981, 141 Von Soden 1968, 215 Borger 2004, 383 Stol 1971, 366 Edzard 1994, 13
2	*a*(?)-**PI**-*al* [Stol 1981] / *ip-**pa₁₂**-al* [Von Soden 1968]			
3	**PI**-*al-gu-ú-a*			
4	**PI**-*al-gi-ia*			
5	(gi)***wa**-ne-e*	Abb 12, 118:4		Van Sodt 1990, 98
6	[a]*l-**wa**-am*	AbB 12, 165: 14; 15; 16 and 19	North?	Van Sodt 1990, 130
7	[a]*l-**wa**-am*			
8	*al-**wa**-am*			
9	*a-al-**wa**-am*			
10	**PI**-*ni-šu*	AbB 5, 175:17	Nippur	Kraus 1972, 88
11	*ni*-[ša-a]*p-**pa₁₂**-ra-aš-ši*	ABIM 10:15	South?	Al-Zeebari 1964, 31 Von Soden 1968, 215 Stol 1971, 366 ('perhaps')
12	DUB-***pa₁₂**-ka*	AbB 10, 11:16	Kiš?	Kraus 1985, 18
13	*ši-**pa₁₂**-as-si-ni*	AbB 6, 121:11	Kiš?	Frankena 1974, 76
14	*ni-iš-ta- **pa₁₂**-ar*? [Von Soden and Röllig] / *ni-iš ta **wa** ar*? [Kraus]	AbB 4, 153:22	South?	Kraus 1968, 102 Von Soden and Röllig 1991, 43 Borger 2004, 383

[209] Personal or geographical names are excluded throughout the present study.

15	*ti-ša*-**PI**-*ar* [Stol] / **TI**-*ta-wa-ar* [Veenhof]	AbB 14, 152:7		Stol 1971, 366 Veenhof 2005, 142
16	**GAL**.NI-*ka*? / ***pa₁₂-ni-ka***?	AbB 2, 144:16	North? / Diyala?	Frankena 1966, 94 Borger 2004, 383 Von Soden 1968, 215 Von Soden and Röllig 1991, 43

The last three cases of the table are doubtful and not all scholars agree on their reading[210]. In the edition of the letter in AbB 4 ,153 (instance number 14 in the table), Kraus notes that Von Soden's reading *ni-iš-ta-**pa₁₂**-ar* 'we have sent' is possible, but he nonetheless casts his doubts on the reading *pa₁₂* for the sign PI (Kraus 1968 [AbB 4], 102, note 153d). For AbB 14, 152:7, Stol (1971) considers the sign PI a case of the variant *pa₁₂,* while Veenhof in his edition of AbB 14 prefers to transliterate *wa* and leaves the form untranslated. Similarly, the preferred reading for number 15 is GAL.NI-*ka* rather than ***pa₁₂**-ni-ka*, as pointed out in Frankena 1966 and Borger 2004[211]. Von Soden (1968) also agrees with that:

> Beispiele [...], wo *pa₁₂-ni-ka* als Verlesung zu streichen ist. (Von Soden 1968, 215).

Paradoxically, in the last edition of Von Soden and Röllig's study of the Akkadian syllabary, Von Soden and Röllig 1991, the instance number 15 of the table still appears as *pa₁₂-ni-ka,* and is listed as one of three examples of *pa₁₂* in OB[212].

Even discarding the reading *pa₁₂* from the last example, Table 20 shows a total of 15 occurrences of the sign PI for a expected sign PA in eight different OB letters. Four of the instances of *pa₁₂* (n. 1-4) occur in an early OB letter from an archive dating to period of Sumu-El of Larsa. For the rest of the tablets, no indication can point to a similarly early date. Regarding the relation between letters and specific locations, four of the listed letters can be associated to southern areas of Mesopotamia: AbB 9, 227 and AbB 5, 175 probably originate from archives in Lagaš and Nippur respectively (see Stol 1971 [BiOr 28], 365-369 and Kraus 1972 [AbB 5], x), whilst AbB 4, 153 and ABIM 10 contain orthographic elements commonly found only in southern letters, such as the lexical term *unnedukkum* 'letter', in the first text, and the sign PI for /pi/ in the second one[213].

However, two other letters in the list, AbB 10, 11 and AbB 6, 121, seem to be associated to the site of Kiš[214], and the provenance of the letter AbB 12, 165 is likely to have been a

[210] Another possible early instance of *pa₁₂,* not included in the table, is WA-*ar-ṣú-um* (AS 22, 15:13'). Whiting (1987) considers the spelling a spoonerism with the initial signs of *warhim* and *parṣum* (see Whiting 1987, 6).

[211] A complete different reading, *pe-ni-ka* is proposed in Leemans 1960. The author derives the form from *pânu* and translates 'may [PN] make you well disposed'. He further comments: 'It cannot be decided whether *penika* is a dialectical form or *pa₁₂-ni-ka* has to be read'. (Leemans 1960, 93, note 3).

[212] Von Soden and Röllig 1991, 43.

[213] For the sign PI as *pi*, see 3.4.2. For the form *unnedukkum,* see e.g., Veenhof 2005 (AbB 14), xiii.

[214] Both letters mention Ištar and Zababa (the patron God of Kiš) in their greeting formulae. Furthermore, AbB 10, 11 also mentions the nearby site of Kutha. Notice that the editor of AbB 10 considers that AbB 10, 11 is a northern letter and takes this fact as a further argument to accept the reading *pa₁₂*: 'Da PI= *pi* [...] in einem nordbabylonischen Briefe nicht zu erwarten, hier wohl [...] als " *pa₁₂*" umschriebenen Verwendung.' (Kraus 1985, 18, note 11f).

northern OB settlement[215], which, in principle, disagrees with the observed southern spread of the orthographic phenomenon.

With regard to other aspects of the letters in Table 20, it is worth noting that some of the texts contain unusual spelling or linguistic elements in comparison with the bulk of OB letters published thus far:

- AbB 12, 165 contains a defective form, *a-wi*-LI-*am*[216] for expected *a-wi-la-am* 'man' in accusative singular, and some erasures.
- AbB 4, 153 includes a number of unexpected forms according to Kraus 1968 (AbB 4): *wa*-AB-*bu* for *wa-aš-bu*; *a-mu*-UR for a predicate that would normally bear the subjunctive ending *-u* (*a-mu-ru*); *a-hu-sú-nu*-ŠI-*ma* for *a-hu-sú-nu-ti-ma*; *ta-pu-ra-a*[m] for *ta-aš-pu-ra-a*[m].
- AbB 2, 144, whose reading *pa$_{12}$* is doubtful, also has a defective form *ma-ru-iṣ* for *ma-ru-uṣ*[217].
- AbB 5, 175 is a document classified by Kraus (1972) as a school letter[218] with 'sehr hässliche, schwer lesbare Schrift' (Kraus 1972, 88 [AbB 5]). It also includes an unexpected *ta-am-ma-ru-um* for an expression canonically marked by a subjunctive *-u* ending: *ta-am-ma-ru*.
- AbB 14, 152, despite its fragmentary state, contains, according to Stol (1971), the unusual dialectal form /ti/ instead of the verbal affix /ta/[219].
- AbB 9, 227, is the letter that contains four of the instances from Table 20. The text of this letter reports a vivid message that could be related to an informal or rapid script. However, it also includes at the end of the text an account of witnesses. According to Edzard (1994): 'dieser Brief zeichnet sich gleich durch mehrere Ungewöhnlichkeiten aus' [220] including the form *ya-ti*-NI for the pronoun commonly written *ya-ti* and the form *ha-l*[a]-*ku-ú* for a predicate *kalûm*.

Not all the letters in Table 20 bear unusual spelling features, apart from the use of PI for expected /pa/. The two letters related to Kiš, AbB 10, 11 and AbB 6, 121 do not have any salient orthographic or linguistic elements.

The scantiness of the evidence for the orthographic variant *pa$_{12}$* in OB texts is still insufficient to corroborate the nature of a possible phonetic motivation or a distinctive geographic localization. However, unlike the use of PI for *pi*, an orthography also suggested to be prompted by a similar process of lenition[221] but more directly associated to southern OB texts (see Kraus comment in note 213, above), the spelling variant *pa$_{12}$* cannot be so unambiguously put in relation with a specific geographical region or period of OB. On the other hand, the few cases of PI for /pa/ listed in Table 20 do not provide evidence that could identify a connection between the occurrence of variant *pa$_{12}$* and the occurrence of variant *pi* in the same texts, something that could be expected if both signs represented the same phonetic weakening of /p/. While AbB 9, 227 and ABIM 10 indeed combine *pa$_{12}$*

[215] Note also the use of the demonstrative pronoun *ša-tu* (AbB 12, 165:18), common in the Diyala region, Mari and northern peripheral Akkadian texts.
[216] AbB 12, 165:18.
[217] AbB 2, 144:5.
[218] Cf. Kraus 1959 (JEOL 16), 16-18.
[219] Stol 1971 (BiOr 28), 366.
[220] Edzard 1994, 13.
[221] Cf. Goetze 1945, 146, note 346 and Von Soden 1965, 215.

and *pi* or *pe*[222]in their texts, letters AbB 6, 121 and AbB 10, 11 present the alternative 'northern' spelling *pí* (sign BI)[223]. The relation between both spelling phenomena, *pa$_{12}$* and *pi*, is therefore not clearly established in the OB record analysed. Independently of their ultimate motivation, phonetic or otherwise, only the use of the sign PI for /pi/ became a customary scribal choice (in southern environments), as the distribution of the variables in extant tablets indicates, and as it is further illustrated by scribal practice tablets of the series TU-TA-TI. Examples of this series of syllabaries stemming from the southern site of Nippur such as tablet CBS 6998[224] demonstrate the equivalent status in some scribal practice of the sign PI (*pi*) within the series of syllabograms that rendered /p/ alongside the signs PA (*pa*) and BU (*pu*): BU-PA-PI.

A resembling use of the sign PI instead of another P-sign, in this case *pu*, occurs in letter AbB 8, 29. The seemingly isolated use of the sign PI for /pu/ in this singular document, has not been accounted for in general works on Akkadian syllabaries such as Borger 2004 or Von Soden and Röllig 1991, but has been noted in Stol 1971 and Cagni 1980 (AbB 8), who considers that *ta-aš*-PI-*ra-am* (AbB 8, 29:7), *i*-PI-*la-an-ni* (AbB 8, 29:13) and *ta*-<aš>-PI-*ra-am* (AbB 8, 29:18) are all examples where a sign BU for /pu/ would have been expected; the letter is further described by Cagni as belonging to the so-called "*ifulanni*-Texts" (Cagni, 1980, 22, note 29a)[225]. Moreover, the text is considered a school exercise[226] and presents several unusual elements, such as the nominative ending for an expected accusative form in *na-da-nu-um* (AbB 8, 29:15)[227], a sign GU$_4$ for UP in *šu*-GU$_4$-*ra-aš-šum-ma* (AbB 8, 29:16) or *lu*-ID-*di-šum* for most common *lu-ud-di-šum*[228]. Instead of pointing to a phonetic factor as the trigger for the occurrence of the sign PI instead of BU in the cases described above, as suggested by Stol (1971) and Cagni (1980), M. Béranger argues that the spelling PI for /pu/ is motivated by epigraphic similarities between both signs:

> le scribe a confondu les signes PI et PU, qui commencent tous deux par des têtes de clou et se terminent par un clou horizontal. (Béranger 2016, Archibab)[229].

The same argument, purely epigraphic, could perhaps be made with respect to the orthographic variant *pa$_{12}$* in those specific letters where the unconventional hand of a scribe not educated in the mainstream writing conventionalisms is inferred. Whilst the graphic shape of the signs PA and PI might not be display a close similarity in the epigraphy of most writers of OB letters, there is at least one tablet, AbB 14, 110, in which the sign PI in

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[222] *pe-te*-[e]*m* (AbB 9, 227:22) and *pi-ḫa-as-su-nu* (ABIM 10:9).
[223] *ša-pí-r*[i-ni] (AbB 6, 151:1), *ša-pí-ir-n*[i] (AbB 6, 151:4), *ša-pí-ri-ia* (AbB 10, 11:1), *ša-pí-ri* (AbB 10, 11:5), *ša-pí-ri* (AbB 10, 11:15).
[224] Published in OIP 011, 022. See also the photo available on the website CDLI: http://cdli.ucla.edu/search/search_results.php?SearchMode=TextandObjectID=P229071 [accessed 01.05.2017].
[225] Another possible use of a sign PI instead of BU for /pu/ could perhaps exist in the extant manuscript A of the Laws of Ešnunna, A ii:11. The signs are partly damaged so their reading values are only tentatively translated as *i-te-wi-š*[um] in Goetze1956, 66 and *i-te-pu!-u*[š] in Yaron 1969, 30.
[226] Cagni 1980, 22. See also the comment in Archibab, where M. Béranger defines the training characteristics of the text: 'Il s'agit de s'entraîner à noter des discours directs et indirects. À la ligne 13, le scribe s'est exercé à écrire la structure du discours direct, mais a laissé la structure vide, sans propos cités'. http://www.archibab.fr/4DCGI/listestextes3.htm?WebUniqueID=1744069 [accessed 01.05.2017].
[227] Cagni 1980, 22, note 29c.
[228] A 'mistake' according to Cagni 1980, 22, note 29e. Cf. M. Béranger: 'Cagni AbB 8 écrit qu'il s'agit d'une erreur pour UD. L'erreur n'est pas visuelle, car les signes UD et ID sont très différents'. http://www.archibab.fr/4DCGI/listestextes3.htm?WebUniqueID=1744069 [accessed 01.05.2017].
[229] http://www.archibab.fr/4DCGI/listestextes3.htm?WebUniqueID=1744069 [accessed 01.05.2017].

its normal values *wa* and *pi*, is sometimes realised with a graphic form that recalls that of the sign PA. Veenhof (2005) notes that:

> The scribe uses two forms of the sign PI, the one normal (lines 14, 38, 44b, and 50), the other shaped like PA (lines 31, 37 and 44a). (Veenhof 2005 [AbB 14], 100, note 110b).

Nevertheless, a hypothetical interchangeability between the signs PI and PA based on a similarity rarely exhibited in OB letters lacks enough direct evidence to be assumed to be a determinant factor for the existence of the orthographic element *pa*$_{12.}$ There are two letters, from the examples of *pa*$_{12}$ listed in Table 20, in which both variants of the variable, *pa*$_{12}$ (PI) and *pa* (PA), coexist in the same tablet. At least in one of them, AbB 4, 153, both signs, PI and PA appear distinguishable.

In sum, the occurrence of the sign PI in contexts where /pa/ is expected in OB letters is still poorly documented. The data, consisting of 15 or 16 possible attestations found in ACCOB and other OB collections of letters, is not quantitatively robust enough to provide basis for phonetic, lexical or sociolinguistic motivations that could have led OB scribes to favour the graphic element *pa*$_{12}$ over the ubiquitous spelling *pa* for the cluster /pa/.

If all the readings and transliterations in Table 20 are considered to be accurate, instances of *pa*$_{12}$, unlike the variant spelling *pi*, might not have been associated exclusively to southern OB sites. On the other hand, it might be relevant to stressed that the OB orthographic feature *pa*$_{12}$ has been mainly observed in epistolary texts, i.e., the closest to speech of historical writing genres[230], and that in several of the instances of *pa*$_{12}$ listed in Table 20, the peculiar spelling occurs along other unusual orthographies or elements that differ from conventional forms in OB letters[231].

3.4.2 /pi/ and /pe/

3.4.2.1 The voiceless variables (pi,pí), (pe,pé)

OB texts do not represent graphically the distinction of the pair of voiced and voiceless segments /bu/ and /pu/, both rendered by the same sign BU. On the other hand, besides a few number of exceptions, presented in 3.4.1.1, the pair /pa/-/ba/ is usually distinguished in OB letters by the use of signs PA and BA in writing. The graphic representation of voicing for the syllabic pairs /bi/-/pi/ and /be/-/pe/, however, presents a pattern of variation in OB texts that is generally associated to geographical variables[232]: whilst the representation of the segments /pi/, /pe/ and /bi/, /be/ in northern texts is generally made by the same sign, BI (transliterated as *pí*, *pé* and *bi*, *bé* respectively)[233], southern OB texts distinctively add another sign to the repertoire, PI, to render the voiceless units /pi/ and /pe/, conventionally transliterated *pi* and *pe*. There exists, therefore, a variable (pi,pí)/

[230] Elspass 2012, 156.
[231] As we know from the extant manuscripts published thus far. Thousands of OB letters still await publication and many more might be disclosed in the future that might provide different insights to what we consider conventional in the orthography and linguistics characteristics of OB correspondence.
[232] The sign *pi*$_4$ will not be included in the present study due to its exclusive occurrence in PNs and GNs in the corpus of OB letters.
[233] The syllabic segment /bi/ and /be/ are also rendered by other signs in OB, most notably NE (*bí)* and BAD (*be*).

(pe,pé) in OB texts in which the clusters /pi/ and /pe/ are written either with the sign BI (*pí* and *pé*) or with PI (*pi* and *pe*). The general consensus is that the variants *pi* and *pe* (sign PI) belong exclusively to southern OB texts[234] and therefore, the occurrence of *pi* and *pe* in a text of unknown provenance is often taken as an indication of its geographical origin. Correspondingly, and in contrast to the descriptions of other orthographic variables that are commonly portrayed as 'preferred' spelling choices for either northern or southern areas, the association between the spellings *pi* and *pe* and the southern area of Mesopotamia is more straightforwardly present in the literature:

> der Gebrauch des Zeichens PI für *pi* (anstatt *pí*) wohl auf den Süden beschränkt war. (Von Soden and Röllig 1991, xxxi).

However, there are questions about the variable (pi,pí) that need further research. On the one hand, *pi* and *pe* are orthographic elements that have been also related not only to the South, but also to other OB areas such as the Diyala region[235]. Additionally, southern OB texts also enclose the sign BI to represent /pi/ or /pe/, whilst the degree of commitment to the use of either *pi* and *pe* or *pí* and *pé* in southern OB letters has not been fully explored.

Likewise, other aspects for discussion have been suggested regarding a dialectal motivation for its distribution in the textual record. Goetze (1945) gives one of the earliest accounts for the North-South differentiation of the variable (pi,pí) and (pe,pé), by listing and grouping their occurrences along with other variables in OB mathematical texts. Besides the widely accepted division noting the spelling *pi* in southern texts and *pí* in northern texts, Goetze proposes the existence of another spelling system, which he suggests might have characterised the texts from the southern site of Uruk. According to a number of instances observed in a group of tablets where the spelling *pé* occurs alongside with the spelling *pi*, Goetze suggests that an orthographic system existed, probably in the writing practised in OB Uruk, where the sign PI rendered /pi/ and the sign BI rendered the same voiceless consonant but with a different vowel: /pe/[236]. Thus, texts from this group, according to Goetze's classification, includes seven instances of the form *he-**pé**-ma* 'break' (sign BI) alongside he spellings *pi-ir-kum*, *pi-ir-kam*, *pi-ir-ki*, *hi-pi-tum* and *iš-pi-il* (PI sign)[237]. Additionally, there are another two instances of the same form written with the sign PI: *he-pe-ma*.

On the other hand, the occurrence of both spellings, *pi* and *pí*, in the OB record has also been linked to phonetic nuances at the level of the spoken language. As it was the case for $pa_{12,}$ the orthographic application of the sign PI to render an expected syllable /pa/ (see section 3.4.1), the writing of the sign PI instead of BI to render /pi/ has been hypothesised to represent graphically a phonetic lenition by which the etymological consonant stop [p] would be articulated as a fricative [f] or similar. In the lack of a syllabic sign for /fi/, the sign PI, which is mostly used in OB texts for the values *wa* and *wi*, would have been regarded as the preferred option to denote [fi]. Goetze (1945) suggests:

> One may ask whether this indicates a change in pronunciation. It may very well be that in southern OB *p* had shifted to *f* (as in South Semitic). In other words, *pi* may

[234] Cf., i.a., Von Soden 1995, Borger 2004, Labat and Malbrat-Labat 1995, Streck 2014, Huehnegard 2011.
[235] See Lieberman 1971, 88, note 240. The use of PI for /pi/ and /pe/ also characterises the texts from the OB peripheral texts from Susa, which are not included in the present thesis. For orthographic and linguistics aspects of the OB texts from Susa see Salonen 1962 and Meyer 1962.
[236] Goetze 1945, 150.
[237] Goetze 1945, 149, '4th Group'.

> have been pronounced *fi* for which *wi* was the closest approximation. (Goetze 1945, 146, note 346).

The same idea was replicated in Von Soden's article 'Die Spirantisierung von Verschlusslauten im Akkadischen: ein Vorbericht':

> Wie kam das Zeichen für *pi* schon im frühen Altakkadischen zu den Lautwerten *wa*, *wi* und *wu* [...]. Am leichtesten verständlich wäre das unter der Annahme, dass man in (sumerischen oder akkadischen) Wörtern ein *pi* unter bestimmten Umständen schon früh als *fi* sprach, wobei vorläufig offen bleiben muss, ob die Spirans labiodentales *f* war oder die bilabiale Muta *ph*. (Von Soden 1968, 215).

However, it is admitted that our knowledge about the real dimension of a hypothetical phonetic motivation of the orthographic variable is not known:

> Darf man daraus schliessen, dass *p* häufiger spirantisch gesprochen wurde? Hier bleibt vorläufig alles ganz unsicher. (Von Soden 1968, 215).

In that sense, the study of the distribution of the variable (pi,pí) in the OB record and its relation to phonetic environments and geographical and sociolinguistic variables could provide valuable insight into the nature of the writing constraints at work in the choice of alternative spellings in OB texts. In the present study, the research will focus exclusively on the occurrence of the variables (pi,pí) and (pe,pé) in the OB letters included in the ACCOB corpus.

A first glance into the data from the corpus confirms a higher frequency of spellings for /pi/ and /pe/ by means of the sign BI in the general account of instances, and a sharp separation in the distribution of variants in relation to given associations with northern and southern Mesopotamian areas. The greater number of instances of the sign BI is also directly related to the fact that the majority of the data for the variables in the corpus belong to northern-related texts.

Figure 16, below, shows that the texts initially classified under the rubric 'northern-related letters' in ACCOB display almost unanimously the spellings *pí* and *pé*, while only 12 occurrences of the spelling *pi* and four of *pe* in this group contradicts the pattern. Correspondingly, the sign PI for the representation of the syllabic segments /pi/ and /pe/ occurs overwhelmingly in the documents categorized as 'southern-related letters'.

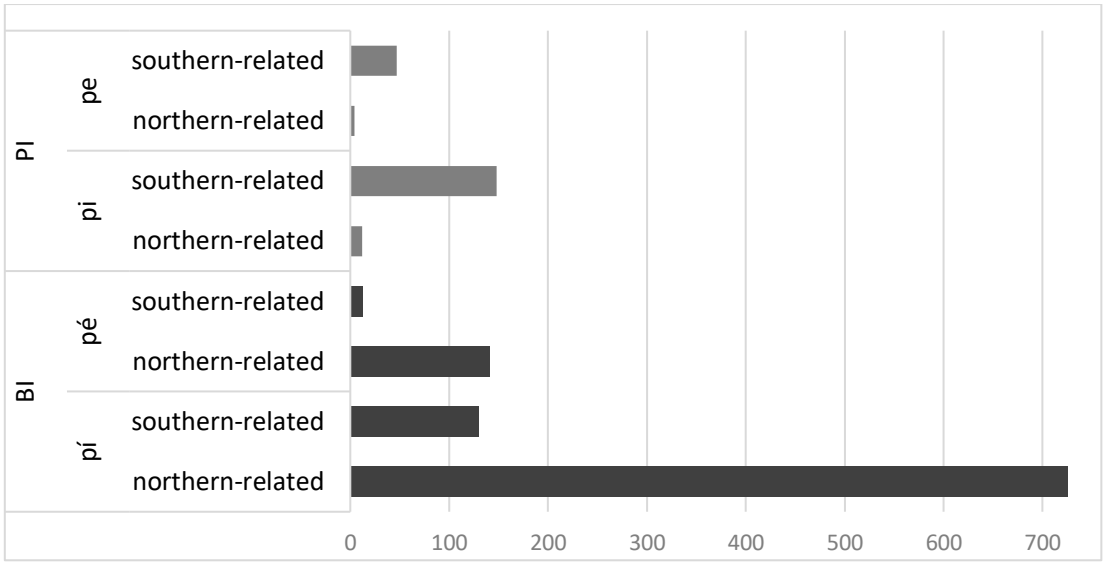

Figure 16: Number of instances of the variables (pi,pí) and (pe,pé) in ACCOB[238].

While 195 instances of PI rendering /pi/ or /pe/ are associated to southern-related letters, only 16 occur in texts not classified into that group. Table 21, below, shows the 148 instances of the spelling *pi* as it occurs in transliterations of the southern-related letters from the ACCOB corpus.

Table 21: Instances of pi *in texts from ACCOB classified as related to the southern region.*

N.	Form	Letter	Sender	Location related
1	*pi-ʾiq-daʾ-ma*	AbB 14, 213:8	Ahum	Umma
2	*pi-qí-ʾtámʾ*	AbB 14, 213:8	Ahum	Umma
3	*pi-qá-at*	AbB 14, 112:39	Ahum-waqar	Ur
4	*húp-pi-im*	BaM 2, p.54, iii:23	Anam	Uruk
5	*il-la-pi-it*	BaM 2, p.54, iii:14	Anam	Uruk
6	*na-pi-iš-tim*	BaM 2, p.54, iv:18	Anam	Uruk
7	*pi-i-im*	BaM 2, p.54, iii:28	Anam	Uruk
8	*pi-i-im*	BaM 2, p.54, iv:10	Anam	Uruk
9	*pi-i-im*	BaM 2, p.54, iv:22	Anam	Uruk
10	*pi-i-im*	BaM 2, p.54, iv:26	Anam	Uruk
11	*ni-pi-at*	AbB 14, 224:3'	Apil-[...]	Girsu
12	*pi-qá-at*	ABIM 22:29	Awil-Šamaš	Larsa?
13	*ša-pi-ir-ka*	AbB 10, 57:27	Enlil-bani	South
14	*pi-te-e-ma*	UET 5, 14:5	Gimillum	Ur
15	*al-pi*	AbB 14, 121:15	Hariya	Larsa
16	*pi-làh*	AbB 11, 1:20	Ibbi-ilum II	Nippur
17	*pi-i-ka*	AbB 5, 2:2'	Iddin-Enlil	Adab
18	*TU-up-pi-im*	AbB 8, 15:23	Igmil-Sin	Larsa?
19	*p*[i-i]*š-tim*	AbB 11, 139:15	Ilabrat-palil	Adab
20	*pi-ia*	UET 5, 19:19	Ili-hullul	Ur

[238] The graphic includes data from the Diyala area within the group of northern-related letters. For the spelling of the variables (pi,pí) and (pe,pé) in the Diyala region see section 3.4.2.1.3.1.

21	*p*[i-i]*a*	UET 5, 19:9	Ili-hullul	Ur
22	*pi-i*	AbB 14, 144:12	Ili-iddinam	Larsa
23	[DU]B-*pi*	UET 5, 64:9	Ili-u-Šamaš	Ur
24	[a]*l-pi*	AbB 11, 144:8	Ilšu-tillasu	Adab
25	*al-pi*	AbB 14, 223:20	Imgur-Sin	Girsu
26	*al-pi-ka*	AbB 14, 223:26	Imgur-Sin	Girsu
27	*a-pi-ta-am*	AbB 5, 42:9'	Ipiq-Ištar	Adab
28	*a-al-pi*	TCVP III 6:8	Ipqu-Sin	Larsa
29	*al-pi*	RA 30, p.98-100:7	Lu-igisa	Lagaš
30	DUB-*pi*	AbB 4, 126:9	Lu-Ninurta	Larsa
31	DUB-*pi*	AbB 4, 130:22	Lu-Ninurta	Larsa
32	DUB-*pi*	AbB 4, 154:25	Lu-Ninurta	Larsa
33	DUB-*pi*	YOS 15, 34:6	Lu-Ninurta	Larsa
34	DUB-*pi*	YOS 15, 34:10	Lu-Ninurta	Larsa
35	DUB-*p*[i]	AbB 9, 200:6	Lu-Ninurta	Larsa
36	DUB-*pi-ia*	AbB 9, 200:9	Lu-Ninurta	Larsa
37	DUB-*pi-ka*	AbB 9, 200:8	Lu-Ninurta	Larsa
38	*e-pi-iš*	AbB 4, 53:15	Lu-Ninurta	Larsa
39	*na-pi-iš-ta-am*	AbB 4, 113:6	Lu-Ninurta	Larsa
40	*na-pi-iš-tam*	AbB 8, 73:5'	Lu-Ninurta	Larsa
41	*ša-pi-ri-*[…]	AbB 4, 131:23	Lu-Ninurta	Larsa
42	*šu-up-pi-il-ma*	AbB 4, 68:19	Lu-Ninurta	Larsa
43	*ṭú-up-pi*	AbB 4, 52:3'	Lu-Ninurta	Larsa
44	*ṭú-*[u]*p-pi*	AbB 4, 62:10	Lu-Ninurta	Larsa
45	*ṭú-up-pi*	AbB 4, 117:7	Lu-Ninurta	Larsa
46	*ṭú-up-pi-ia*	AbB 4, 114:15	Lu-Ninurta	Larsa
47	*ši pi*? X	AbB 8, 3:19	Lu-Ninurta	Larsa
48	*pi-ha-as-sú-nu*	AbB 4, 46:9	Lu-Ninurta	Larsa
49	*pi-ha-at*	AbB 4, 125:18	Lu-Ninurta	Larsa
50	*pi-i*	AbB 4, 63:6	Lu-Ninurta	Larsa
51	*pi-i*	AbB 4, 130:22	Lu-Ninurta	Larsa
52	*pi-i*	AbB 9, 200:6	Lu-Ninurta	Larsa
53	*pi-il-ka-at*	AbB 4, 57:9	Lu-Ninurta	Larsa
54	*pi-i-šu*	YOS 15, 33:11	Lu-Ninurta	Larsa
55	*pi-qá-at*	AbB 4, 49:11	Lu-Ninurta	Larsa
56	*pi-qí-is-sú-ma*	HE 107:14	Mar-erṣetim	Larsa
57	*li-ir-pi-su-ú-ma*	AbB 11, 142:12	Mar-erṣetim	Adab
58	*e-pi-ni-im*	UET 5, 31:18	Nabi-Enlil	Ur
59	*e-he-pi-i*	AbB 9, 218:27	Nanna-mansum	Lagaš
60	*ka-as-pi-im*	UET 5, 81:30	Nanni	Ur
61	DUB-*pi*	UET 5, 80:16	Nergal-gašer	Ur
62	*pi-šu*	AbB 11, 167:8	Nidittum	Larsa
63	*pi-i*	AbB 4, 150:27	Nidnat-Sin	Larsa
64	*pi-qá-at*	AbB 4, 150:33	Nidnat-Sin	Larsa

65	*pi-ta-a-am*	AbB 9, 263:11	Nur-Sin	Lagaš
66	*pi-šu*	AbB 11, 135:10	Rim-Sin-[…]	Adab?
67	*pi-*[š]*u*	AbB 11, 135:22	Rim-Sin-[…]	Adab?
68	*na-pi-iš-ta-ka*	AbB 10, 66:14	Rim-Sin	Larsa
69	*ša-pi-ra-am*	RA 2008, 3:11	Rim-Sin	Larsa
70	*tú-pi-ku-ʾnuʾ*	JCS 21, 269 [A7535]:4	Rim-Sin	Larsa
71	*tú-pi-ku-nu*	JCS 21, 269 [A7535]:6	Rim-Sin	Larsa
72	*pi-ha-at*	YOS 15, 22:14	Rim-Sin	Larsa
73	*pi-i-šu*	YOS 15, 22:13	Rim-Sin	Larsa
74	*pi-qí-it-tim*	RA 2008, 2:10	Rim-Sin	Larsa
75	*pi-šu*	YOS 15, 21:16	Rim-Sin	Larsa
76	*pi-ti-a-ma*	YOS 15, 20:8	Rim-Sin	Larsa
77	*li-i*[p-p]*i-s*[u]*-ú-šu*	AbB 8, 14:10'	Rim-Sin-Enlil-kurgalani	Larsa
78	*u*[p]*-pi-sà-a-šu*	AbB 8, 14:17'	Rim-Sin-Enlil-kurgalani	Larsa
79	*pi-ha-at*	RA 102, 17:18	Ṣilli-Agade	South
80	*it-te-eh-pi*	ABIM 20:10	Ṣilli-Šamaš II	Larsa
81	*šu-pi-il*$_5$*-su*	ABIM 20:56	Ṣilli-Šamaš II	Larsa
82	*pi-i*	ABIM 20:26	Ṣilli-Šamaš II	Larsa
83	*e-pi-ni*	AbB 14, 61:9	Ṣilli-Šamaš	Larsa
84	*iš*(?)*-pi-lu-ni-im*	AbB 14, 64:7	Ṣilli-Šamaš	Larsa
85	*is-sé-e-pi*	AbB 14, 62:10	Ṣilli-Šamaš	Larsa
86	*la-pi-it-ma*	AbB 14, 56:21	Ṣilli-Šamaš	Larsa
87	*ni-*PI*-i-im*	AbB 1, 90:15	Ṣilli-Šamaš	Larsa
88	*sà-pi-in-ma*	AbB 10, 193:20	Ṣilli-Šamaš	Larsa
89	*ša-pi-il-ti*	AbB 14, 56:18	Ṣilli-Šamaš	Larsa
90	*ṣa-a-pi*	AbB 14, 59:17	Ṣilli-Šamaš	Larsa
91	*ši-pi-ir*	AbB 9, 110:12	Ṣilli-Šamaš	Larsa
92	*pi-i*	AbB 14, 55:6	Ṣilli-Šamaš	Larsa
93	*pi-i*	AbB 9, 49:31	Ṣilli-Šamaš	Larsa
94	*pi-šu-nu*	AbB 9, 49:27	Ṣilli-Šamaš	Larsa
95	*pi-ti-iq-tam*	AbB 14, 55:28	Ṣilli-Šamaš	Larsa
96	*pi-hi-a*	AbB 14, 163:22	Šamaš-hazir	Larsa
97	*pi-qá-at*	AbB 14, 164:29	Šamaš-hazir	Larsa
98	*e-pi-i*[š]	AbB 11, 11:16	Šamaš-kinam-ide	Nippur
99	*na-pi-*IS*-ti*	AbB 11, 11:10	Šamaš-kinam-ide	Nippur
100	*e-le-pi*	UET 5, 52:31	Šamaš-naṣir	Ur
101	[e]*-le-ep-pi*	UET 5, 52:14	Šamaš-naṣir	Ur
102	*pi-i*	UET 5, 52:13	Šamaš-naṣir	Ur
103	*na-pi-iš-ti*	AbB 9, 48:14	Šep-Sin	Larsa
104	*pi-i-*[ki]	AbB 14, 110:44	Šerum-ili	Larsa
105	*pi-im*	AbB 14, 110:38	Šerum-ili	Larsa
106	*pi-i-sà-am*	AbB 14, 110:50	Šerum-ili	Larsa
107	*pi-qá-at*	AbB 14, 110:37	Šerum-ili	Larsa
108	*ur du pi*	UET 5, 60:7	Sin-bel-aplim	Ur

109	*pi-ir-ka-am*	UET 5, 60:14	Sin-bel-aplim	Ur
110	*ka-as-pi-im*	UET 5, 73:18	Sin-eribam	Ur
111	*na-pi-iš-tum*	AbB 5, 166:14'	Sin-magir	Nippur?
112	*na-pi-iš-tu-um*	AbB 5, 166:9	Sin-magir	Nippur?
113	*al-pi-im*	AbB 11, 185:28	Sin-magir	Larsa?
114	*pi-si-il-ti*	AbB 11, 185:20	Sin-magir	Larsa?
115	*pi-ha-a-tum*	UET 5, 44:5'	Sinma-ilum	Ur
116	*pi-ha-at*	AbB 11, 194:24	Sin-muballiṭ	Larsa
117	*ta-aš-pi-it*	AbB 9, 34:21	Sin-muštal	Larsa
118	*hi-pi*	UET 5, 78:17	Sin-šamuh	Ur
119	*hi-pi*	UET 5, 78:32	Sin-šamuh	Ur
120	*pi-te-e-ma*	AbB 11, 187:14	Sin-uselli II	Larsa
121	*˹pi˺-ha-tum*	YOS 15, 60:15	Sin-uselli	Larsa
122	*pi-ha-as-sú*	AbB 4, 70:7	Taribatum	Larsa
123	*pi-i*	AbB 3, 71:17	Taribum	South
124	*tu-up-pi*	AbB 11, 137:7	Ubarum	Adab
125	*tu-up-pi-ia*	AbB 11, 137:6	Ubarum	Adab
126	*ša-pi-ṭa*	AbB 4, 138:20	Ud-balana-namhe	Larsa
127	*ú?-pi-ir?*	Nisaba 12, VI 18:8	Unknown III	Ur
128	*pi-i*	Iraq 31 71-2 [A7536]:13	Unknown III	Larsa?
129	*pi-qí-is-sí-na-a-ti*	AbB 11, 152:27	Unknown IX	Nippur
130	*e-pi*-[i(?)-ma(?)]	AbB 5, 35:2	Unknown IX	Adab
131	*ku-pi-da*	AbB 5, 172:20	Unknown V	Nippur?
132	*pi-ti-a-ma*	AbB 5, 172:27	Unknown V	Nippur?
133	*˹pi-iš˺-r*[e]-*˹e˺-tim*	AUWE 23, 82:11	Unknown VIII	Uruk
134	*pi-ti*	AUWE 23, 82:3	Unknown VIII	Uruk
135	*pi-qí-is-sú-nu-ti-i-ma*	AbB 5, 201:6	Unknown XVI	Nippur?
136	PI *e-em*	AbB 5, 56:3	Unknown XVIII	Adab
137	*pi-i-k*[a]	AbB 5, 26:5	Unknown	Adab
138	*ši-pi-ir*	AbB 10, 69:6	Unknown	South
139	*ši-pi-ir*	AbB 10, 69:9	Unknown	South
140	[n]*a-pi-iš-ti*	BaM 2, p. 54-55:7	Unknown	Uruk
141	*˹li˺-iṭ-ṭa-pi*	BaM 22, 186:24	Ur-[…]	Uruk
142	*ša-pi-il-t*[i]	AbB 8, 103:11	Utu-lu-ti	Lagaš
143	DUB-*pi*	AbB 9, 40:29	Watar-Šamaš	Larsa
144	DUB-*pi*	AbB 9, 114:17	Watar-Šamaš	Larsa
145	DUB-*pi*-[ia]	AbB 9, 114:20	Watar-Šamaš	Larsa
146	*i-ne-ep-pi-ú*	AbB 9, 238:6	Wuttur-dunni	Lagaš
147	*li-ip-pi-ú*	AbB 9, 238:9	Wuttur-dunni	Lagaš
148	*it-te-né-eh*-[p]*i*	AbB 11, 168:17	Zinu	Larsa

Regarding the 16 cases of spellings *pi* and *pe* in northern-related texts:

- Three instances come from early OB letters from Ešnunna[239].
- Four further instances belong to the group of letters sent by Atahzum[240], a group of five letters from the time of Hammurabi that, despite their connection to the site of Sippar, present other unusual spellings for letters recovered in the northern area of Sippar such as the sign DU for /ṭu/, a topic already discussed in section 3.3.4.

  One further instance of *pe* in a letter initially categorized into the southern-related group in ACCOB, appears in a letter from Aha-Nuta[241], a document that is in fact part of the southern archive of Šamaš-hazir in Larsa. The reason why the letter (as well as the rest of the correspondence form that sender) was not included in the southern-related group of letters in the first place is due to the information given in the website Archibab, where it is stated that the place where the letter was written was originally Babylon[242]. However, while there is no clear indication in the content of the letter that the sender was established in a northern location, other orthographic elements contained in the letter correspond to traits frequently associated to southern OB texts[243].
- The sign PI in *e-pe-ši-im* 'to do', from the edition of AbB 10, 121:15', should be in fact emended to *pé*[244].
- Three more instances, *a-pi-iš* (AbB 12, 56:18 and 23)[245] and *li-ik-tap-pi-ir* [246] (AbB 1, 67:13'), are salient spellings within the group of letters from their respective issuers, who employ the most frequent sign BI to render /pi/ or /pe/ elsewhere in their letters[247].

The association of instances of spellings *pi* and *pe* and southern-related letters from ACCOB is statistically robust and it is only challenged by a small number of outliers. However, the evident correlation between the spellings *pi*/*pe* and their regional relationship with southern documents is not bidirectional. While it can be argued that the great majority of letters containing *pi* or *pe* pertain to documents classified as southerners in the corpus, it cannot be unambiguously claimed that southern-related texts deploy the sign PI for the variables (pi,pí) and (pe,pé) with the same predominance.

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[239] *ší-pi-*ʾ*ir*ʾ-[kà(?)] (AS 22, 20:26); *e-ep-pe-eš* (AS 22, 51:6) and, possibly, [x]-*pe-eš* (AS 22, 45:15).
[240] *he-pi-im* (AbB 8, 46:8 and 9) and *ša-pi-ir* (AbB 8, 56:5 and 6).
[241] *pe-ti-a* (AbB 4, 137:12).
[242] Archibab: 'Lieu de découverte: Larsa (?). Lieu de rédaction: Babilim'. http://www.archibab.fr/4DCGI/en/listestextes3.htm?WebUniqueID=2544443 [accessed 01.07.2017].
[243] See, e.g., the CVC complement A.ŠÀ-*lum* (AbB 4, 137:9) or the spelling a-a for the form /ia/ in *ka-ap-pa-a-a* 'my hands' (AbB 4, 137:12). Cf. Goetze 1945, 146ff and Veenhof 2005, xiii.
[244] See Tablet photo in CDLI website: http://cdli.ucla.edu/dl/photo/P347586.jpg [accessed 01.07.2017].
[245] In a letter from Awil-ilim. Other instances in texts from Awil-ilim contain only the spelling *pí* or *pé*. Note, however, the lexical particularity of the form *appiš* 'since, given that' in AbB 12, 56, which according to van Soldt 'is so far only attested in Old Assyrian texts and in Mari' (Van Soldt 1990 [AbB 12], 45 note b). The use of the sign *qa* in letters from Awil-ilim is also infrequent in southern-related letters (see section 3.5.3).
[246] The use of PI in *li-ik-tap-pi-ir* is an outstanding orthographic feature within the letters sent by Munawwirum, an individual from the time of Samsu-iluna whose letters belong to the archive of Etel-pi-Marduk (see Kraus 1985 [AbB 10], xvi-xvii). Other instances of the variables (pi,pí) and (pe,pé) in Munawwirum's letters are: *ša-pí-ir*, DUB-*pí* (x3), *la-pí-it*, *za-qá-pí-im*, *ša-pí-ri-ia*, *ša-pí-ri*, *ša-pí-ri-ia*, *pé-tu*(?)-*ú*(?), *né- pé-ši-it* and *e-pé-su*, all of them featuring the sign BI.
[247] The remaining instances are [a]*p-pi-im* (AbB 14, 16:16; listed in Archibab with the information 'Lieu de découverte: Inconnu (?)' [http://www.archibab.fr/4DCGI/listestextes3.htm?WebUniqueID=3198881 [[accessed 01.05.2017]]. Cf. also Veenhof 2005 [AbB 14], xiii); DUB-*pi* (AbB 5, 120:4; a very short letter); and *a-pi-tam* (AbB 5, 253:7; a short and fragmentary letter).
The form transliterated *i-pe-te-ma* MHET 1/1 87:14 (Archive or Ur-Utu) needs to be emended to *i-pé-te-ma* (s. copy in MHET 1/1).

Figure 17 shows the distribution of the sings PI and BI in those letters from ACCOB labelled as southern-related texts.

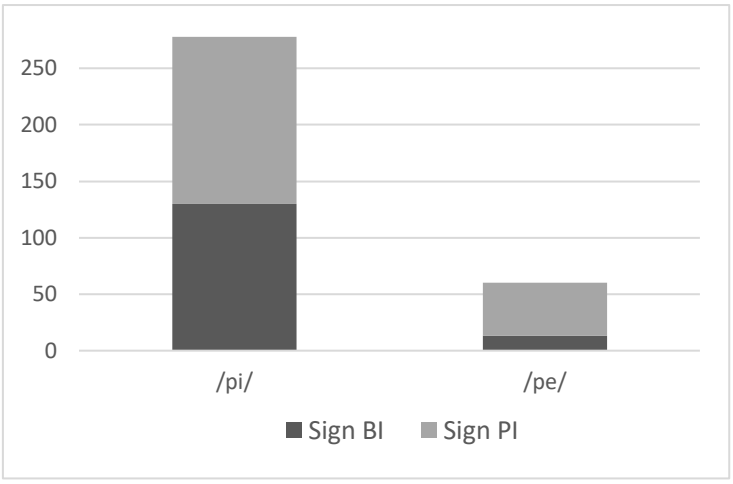

Figure 17: Number of instances of the variables (pi,pí) and (pe,pé) in southern-related texts in ACCOB

An examination of the spellings *pí* and *pé* (sign BI) related to chronological, textual and individual variables in texts classified as southern-related letters in ACCOB is presented in the following sections.

3.4.2.1.1 Early OB letters

Due to the fewer amount of extant documents and their frequently concise messages, the early OB letters in ACCOB do not contain many instances of the variables (pi,pí) and (pe,pé). Nevertheless, some observations on the distribution of the evidence from the early OB letters deserve attention for their apparent dissimilarity with respect to other temporal stages of OB texts documented in the corpus.

First, although the spellings *pi* and *pe* (sign PI) occur in southern archives, there are at least three instances in early OB letters from Ešnunna[248], one of them from a date as early as the reign of Bilalama (beginning of the XX century BCE). This does not imply that the sign PI is the preferred option to render /pi/ or /pe/ in the early OB letters from Ešnunna (14 instances of *pí* occur in the same group of letters[249]). However, as it will be shown in section 3.4.2.1.3.1, the presence of the spelling *pi* in these early texts contrasts with later middle OB texts from the Diyala region.

[248] *ší-pi-ʿirʾ*-[kà(?)] (AS 22, 20:26); *e-ep-pe-eš* (AS 22, 51:6) and, possibly, [x]-*pe-eš* (AS 22, 45:15).

[249] Cf. Whiting 1987. The chart in Whiting 1987, 4 shows a division of orthographic differences into two distinctive periods covered by the early letters from Ešnunna: the orthography of the most archaic letters versus the innovative orthographic traits of a subsequent period of early OB. However, 'the method of writing certain etymologically determined phonetic segments' (chart in page four) could lead to confusion with respect to the variable (pi,pí). In the chart, the forms for /pi/ and /pe/ are presented divided in two chronological columns: under 'earlier writing' we find the sign BI, and under 'later writing' the sign PI. Such division might lead to the conclusion that PI is the normal spelling for /pi/ and /pe/ in the second period of the OB letters from Ešnunna, as opposed to the earlier one. The evidence, however, is somewhat different, as it can be observed in a second chart (in page 35) with a list of occurrences from both variant spellings. While in the first period (not including PNs) the sign BI occurs six times for only one case of PI (AS 22, 20:26) to denote /pi/ or /pe/, the second period does not contrast clearly with the first one and still contains more instances of BI (four) than PI (only two: AS 22, 45:15 and AS 22, 51:6) for the segment /pi/.

Second, while very few instances of the variables are attested for the early OB correspondence from most southern sites like Nippur or Larsa, the sign PI appears already rendering /pi/ or /pe/ in these southern texts[250].

Nonetheless, the scribes who wrote the early OB letters from the archive of Kisurra employ exclusively the sign BI to render either /pi/ (12 times) or /pe/ (one occasion). Similarly, the letters sent (probably) to Kisurra from the city of Umma[251] by an individual called Ahum, present 14 cases of BI (12 *pí* and two *pé*) for only two cases of PI: *pi*[252]. On the other hand, the best attested early southern OB archive for the variables (pi,pí) and (pe,pé), the archive of Lagaš[253], gives us a balanced occurrence of 11 instances of PI against 10 cases of BI for the variables (pi,pí) and (pe,pé). While the archive comprises letters from several individuals, even a subgroup of texts from one single sender can display a combination of two variants[254]. It is not possible to determine the original locations from where the letters were submitted and the extent to what this factor could relate to the different spellings found in the texts from the archive.

3.4.2.1.2 The graphical distinction for /pi/ and /pe/

In Goetze 1945 it is suggested that a graphical distinction for the segments /pi/ and /pe/ could have been regularly used in texts from the southern city of Uruk[255]. The hypothesis is based on a few number of signs that allegedly represent the clusters /pi/ and /pe/ in a group of OB texts. According to Goetze, /pi/ was represented four times, all of them by the sign PI (*pi*), whereas /pe/ occurred on nine occasions (always in the form *he-pe-ma*), seven of which present the sign BI (*pé*). Goetze's article is, however, concerned only with mathematical texts, and the author is self-aware of the limitations of the quantity and type of texts in the analysis, the reason why he encourages further studies about potential regional peculiarities in business documents and letters.

Within the letters from the ACCOB corpus, only a minor percentage of the documents are related to the site of Uruk[256]. Consequently, not many instances of the variables (pi,pí) and (pe,pé) are attested in letters related to Uruk. Table 22 lists the 16 occurrences retrieved from the ACCOB corpus.

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[250] Although the instances are very scarce, PI appears more often than BI. Thus, Larsa is represented in texts where PI for /pi/ and /pe/ occurs twice (*te-te-né-pe-eš*: AbB 9, 56:5 and *a-al-pi*: TCVP III 6:8) and BI once (*i-pí-ir*: TCVP III 4:8). The site of Nippur is related to texts that include four cases of PI (*pi-làh*: AbB 11, 1:20; *ku-pi-da*, *e-pe-ši-im* and *pi-ti-ʾaʾ-ma*: AbB 5, 172:20, 21 and 27, [notice that the early date for this letter is merely based on the epigraphic shape of the document]) for only one *pí* (*i pí-šu*: AbB 5, 156:14, this letter, however, was described by Larsen 1976, as 'strange 'Old Assyrian' texts''. See nevertheless Whiting 1987, 76 for the opposing opinion that the letter was 'written in good Babylonian utilizing the Babylonian writing system then current, basically the same one found in the early letters in this volume').

[251] Cf. Veenhof 2005 (AbB XIV), xxii; Sallaberger 1999, 35; Sommerfeld 1983, 220ff.; Archibab website: 'Lieu de découverte: Kisurra (?). Lieu de rédaction: Umma' http://www.archibab.fr/4DCGI/listestextes3.htm?WebUniqueID=1706525 [accessed 01.05.2017].

[252] Both in the same letter AbB 14, 213*: pi-qí-ʾtámʾ* (AbB 14, 213:8) and *pi-ʾiq-daʾ-ma* (AbB 14, 213:10). No further instances of /pi/ or /pe/ occur in this letter.

[253] See Stol 1971, 365. Notice that some letters in the archive might in fact have been written from other locations like Larsa. The provenience of the archive was initially related to the site of Larsa (instead of Lagaš) in Walters 1970.

[254] For example, the letters sent by Lu-igisa include three instances of PI (*e-pe-ru-š*[u] and *e-pe-ru-šu-nu*: AbB 9, 222: 7 and 15; *al-pi* RA 30, 98-100:7) and two cases of the sign BI (AbB 9, 211:10 and AbB 9, 220:15). Notice that the two cases for BI correspond to the same form *ši-pí-ir-ka*.

[255] Goetze 1945, 150.

[256] A total of 38 letters in ACCOB are classified as related to Uruk. See Annexe.

Table 22: Instances of the variables (pi,pí) and (pe,pé) in letters related to Uruk in ACCOB.

N.	**Instance**	**Sign**	**Letter**
1	*il-la-pi-it*	PI	BaM 2 [W 20473], iii:14
2	*li-iṭ-ṭa-pi*	PI	BaM 22, 186:24
3	[n]*a-pi-iš-ti*	PI	BaM 2 [W 19900], i':7
4	*na-pi-iš-tim*	PI	BaM 2 [W 20473], iv:18
5	*i pi ri it?*	PI?	BaM 18, 19:9
6	*pi-i-im*	PI	BaM 2, [W 20473], iii:28
7	*pi-i-im*	PI	BaM 2 [W 20473], iv:10
8	*pi-i-im*	PI	BaM 2 [W 20473], iv:22
9	*pi-i-im*	PI	BaM 2 [W 20473], iv:26
10	*pi-iš-re-e-tim*	PI	AUWE 23, 82:11
11	*pi-ti*	PI	AUWE 23, 82:3
12	*húp-pi-im*	PI	BaM 2, 54, iii:23
13	*i-ip-pí-šu*	BI	AUWE 23, 85:3
14	*e-**pe**-ši-ka*	PI	BaM 2 [W 20473], iii:21
15	*tap?-**pe**-e*	PI	BaM 2 [W 20473], i:16
16	*ne-**pe**-ši-im*	PI	BaM 2 [W 20473], iii:6

The occurrences for /pi/ and /pe/ gathered in the letters from ACCOB are admittedly too scanty to claim any regular orthographic practice in the correspondence related to OB Uruk. Nonetheless, the cases listed in the table point towards a preference for the sign PI, both to render /pi/ (instances 1-12) or /pe/ (instances 14-16), while the sign BI appears in one single occasion (instance 13). Such distribution contrasts with the equally scarce attestations of /pi/ and /pe/ in the mathematical OB texts in Goetze 1945, in which the sign BI characterises most of the instances for the syllable /pe/. Furthermore, the only occurrence of BI in the Table 22 corresponds to a form transliterated as *pí* and not as *pé* in AUWE 23[257], which seems to contradict Goetze's observations.

Nevertheless, two caveats are in order. First, the only case of BI in the list, transliterated *i-ip-**pí**-šu* in AUWE 23, 85 (instance n. 13), is recognised as a third person present tense of the predicate *epēšum* 'to do'. However, the conventional transliterations for regular present tense forms of *epēšum* in OB convey the vowel /e/: *i-ip-**pé**-šu*[258] (see, e.g. Von Soden 1995 [GAG^3, Verbalparadigma 17], 20* and passim). Although it is difficult for modern scholars to determine which were the specific vocalic values covered by syllable-signs that had more than one reading (as it is the case for /pi/ and /pe/, both consistently rendered either by the sign PI or the sign BI in Akkadian [259]), *ippeš* is the transcription most widely used for the verbal form under discussion[260]. Moreover, it should be noticed that *he-pé-ma* 'break', the form spelled with the sign BI that co-occurs in opposition to the spelling *pi* (PI) in mathematical texts from Uruk (providing the basis for the proposed distinctive

[257] Cavigneaux 1996, 46.
[258] This is also the transliteration given in Archibab: http://www.archibab.fr/4DCGI/listestextes6.htm?WebUniqueID=2556307 [accessed 01.05.2017]
[259] There is a posible different graphic notation of the vowel in /pi/ and /pe/ in Old Akkadian under the sign pair BÍ and BI. See Hasselbach 2005, 32 and remarks in Sommerfeld 2013.
[260] It should be noticed that it is the sign EŠ, and not IŠ, what generally follows PI or BI in present tense forms of the predicate *epēšum* such as *i-ip-pé-eš*. Nevertheless, examples can be found where modern transliterations of OB texts opt for rendering /i/ instead of /e/: e.g., *i-ip-pí-ša-am* (AbB 13, 113:7, s. van Soldt 1994 [AbB 13], 102).

orthographic complementation PI-BI for /pi/ and /pe/ proposed by Goetze) is not consistently transliterated as rendering [e] in the literature. In some modern editions of letters, the form is transliterated with an *i*-vowel: e.g. *hi-pí* 'break' in AbB 14, 112:36 (Veenhof 2005, 104).

Nonetheless, even if the sign BI in instance n. 13 is assumed to represent the segment /pe/ in opposition to /pi/, three more instances in Table 22 contravene Goetze's suggestion by rendering /pe/ with the sign PI (numbers 14-16). The reliability of the data is nevertheless biased by the fact that most occurrences in the table stem from the same letter (BaM 2, p. 54), a long text sent to Sin-muballiṭ by King Anam[261].

Regarding texts not included in the ACCOB corpus, letter AbB 8, 82 shows a further example of the segment /pi/ rendered by BI in a text related to the site of Uruk[262]: *na-pí-iš-ti* (AbB 8, 82:21). Neither two further administrative texts from Uruk, SANER 2, 27 and SANER 2, 28, provide evidence for a complementary distribution of the signs BI and PI in OB Uruk for the representation of the clusters /pi/ and /pe/, as illustrates the use of BI both for *tap-pí-šu-nu*[263] (SANER 2, 27:6) and *ša-pí-ir* (SANER 2, 28:23).

Although it is very difficult to determine the original vocalic value of some of the clusters that appear transcribed *pí*, *pi*, *pé* or *pe* in modern editions of OB texts[264], there is no clear evidece that senders of letters in ACCOB (including Anam of Uruk, whose letters include instances n.1, 4, 6-9 and 14-16 in Table 22) would alternate different spellings to distinguish graphically between the vowel in /pe/ and /pi/. Whilst most senders of letters in the corpus use only the sign BI to render both segments, authors whose letters present instances of both BI and PI, do not use the spelling alternation to discriminate between the vowels, if we accept the readings and modern transliterations of the OB letters in the corpus[265].

3.4.2.1.3 Geographical constraints

As commented earlier, the data from ACCOB supports the widespread assumption that northern OB texts correlate with the orthographic use of the sign BI to render both the voiced and voiceless pair of labial stop CV clusters (see section 3.4.2.1). The Diyala and the southern region, however, present a less coherent picture with respect to the account of different variants rendering the segments /pi/ and /pe/.

3.4.2.1.3.1 The Diyala region

As pointed out in section 3.4.2.1.1, the early OB letters from Ešnunna, in the Diyala region, included three attestations of sign PI for the spellings *pi* and *pe*. The same sign is found extensively in the spelling of personal names from the same region, most notably in the

[261] Falkenstein 1963. Moreover, it is suggested by I. Arkhipov in Archibab that the text perhaps could be a literary letter: http://www.archibab.fr/4DCGI/listestextes6.htm?WebUniqueID=1047090 [accessed 01.05.2017].
[262] The relation of AbB 8, 82 with Uruk is, however, based on comments of the origin of tablets in TIM II that are not entirely reliable. See L. Cagni's comments in Cagni 1980, vii.
[263] Notice the usual transliteration *pé* instead of *pí* for this form in modern editions of OB letters, frequently reinforced by the graphic representation of a vowel sign *e*: *tap-**pé-e**-šu-nu* (AbB 4, 27:3 and passim).
[264] See, for example, the frequent change /i/>/e/ in the proximity of /r/ or /h/. M. Streck describes this change as 'nicht konsequent' and, moreover, 'in der Keilschriftorthographie nicht immer sicher fassbar'. (Streck 2014, 18).
[265] See section 3.4.2.1.4 for cases of senders that combine instances of the signs PI and BI on their letters.

writing of the name of King Ibal-pi-El II, which appears regularly spelled using the sign PI in the letters (*I-ba-al-**pi**-el*[266]). However, as explained in chapter two, personal and geographical names are not included in the present study due to their idiosyncratic orthography.

In the rest of the letters related to the Diyala region in ACCOB, excluding the early letters from Ešnunna, the segments /pi/ and /pe/ are rendered regularly by the sign BI. A total of 62 instances (53 cases of /pi/ and nine of /pe/) occur in the corpus. In all cases, the CV grapheme used by the scribes is BI (*pí* and *pé*)[267].

Despite the scantiness of instances of *pi* and *pe* and their temporal limitation to early OB letters from Ešnunna, the orthographic use of PI for /pi/ and /pe/ in the Diyala region is acknowledged in descriptions of orthographic features of OB texts from the Diyala region[268]. Lieberman (1971), in his remarks on the generalizations for orthographic and linguistic features in Goetze 1945, points out that:

> This short list of contradictions to the general pattern of Old Babylonian orthography which was elicited from the corpus by Goetze could be expanded […] if one does not limit oneself to instances of the same phenomenon, but, for instance, includes cases of /ṭ/ represented by *TA TE TI TU* (proper to the North) on the same tablet in which /p/ is represented by *PI* (proper to the South). (Lieberman 1971, 88)

And then he explains:

> A system apparently proper to the Diyala region and not infrequent in the extant letters. (ibid., note 240).

This association between spellings *pi*/*pe* and texts from the Diyala region is not further explained, so it is not clear whether it is based on the isolated cases found in early texts from Ešnunna, on the spelling of proper names, or on other types of extant manuscripts. Modern transliterations of literary documents from the Diyala region contain occasional instances of the sign PI as *pi*, but their reading is not always certain. Thus, in J. Westenholz 1997, the version of the literary composition 'Sargon in Foreign Lands' discovered in Tell Harmal (ancient city of Šaduppum)[269] is described as rendering the opposition voiced/voiceless in labial stop consonants by means of the graphic pair BI-PI[270]. However, the only clear example given for *pi*, *li-še-**pi**-ka* (TIM 9, 48:col iii, 6)[271] is read differently in Streck and Wasserman's 'Sources of Early Akkadian Literature': *li-še-**wi**-ka*[272]. The first reading of PI as *pi* in J. Westenholz 1997, however, conditions the interpretation of a following occurrence of the sign BI in col i, 12:

> Because of the orthographic system employed in this text, in which the labials are distinguished for voice, it is impossible to accept B. Groneberg's excellent

[266] Particularly in seals: see e.g. the seal in letter JCS 24, 72.
[267] See for example the letters published in Goetze 1958b or Greengus 1979.
[268] In Von Soden and Röllig 1991, the value *pi* and *pe* for the sign PI is marked with the abbreviation 2b (which stands for altBabylonische Zeit, Südbabylonien) and, between brakets, (2d), which refers to 'selten oder ungewöhnlich' use in the West-Trigris area (Von Soden and Röllig 1991, xxxix and 43).
[269] J. Westenholz 1997, 79.
[270] J. Westenholz 1997, 80.
[271] Other two instances of the sign PI, in TIM 9, 48:col i, 6 and col iv, 12 are in broken parts of the texts and cannot be safely interpreted.
[272] http://www.seal.uni-leipzig.de/ [accessed 01.05.2017].

> suggestion […] to read here *pí-ri-ik* [pa]-*li-šu* 'the border of his realm'. We are left with the signs *bi ri ik* [x] *li šu*. (J. Westenholz 1998, 83).

Streck and Wasserman, whose interpretation of the first sign PI was *wa*, consequently read the second form *pí-ri-ik*. In this transliteration, therefore, the text appears to render /pi/ exclusively by means of the sign BI (*pí*), with no examples of the sign PI representing /pi/ or /pe/.

Another example of *pi* in a text from the Diyala can be found in the transliteration of an incantation originally found in the site of Ishchali (OBTI 302): *ši-it-pi-im* 'pit'[273]. The copy of the tablet in Greengus 1979, however, presents in fact the sign BI: *ši-it-**pí**-im.*

To these examples of non-epistolary texts from the Diyala whose renderings of /pi/ are realised by the sign BI, one can add other paradigmatic OB texts from the same region, such as the Stele of Daduša or the three versions of the Laws of Ešnunna. Neither of these two large texts include instances of the sign PI for the representation of voiceless labial stops /pi/ and /pe/[274]. Nonetheless, the orthographic repertoire employed in the writing of different textual genres can fluctuate notably. In OB, for example, despite the fact that BI is overwhelmingly used in northern letters from the time of Hammurabi, it is not uncommon to find the sign PI for the same segment in royal inscriptions of Hammurabi or in the Epilogue of the Code of Hammurabi. A more general study of the variables (pi,pí) and (pe,pé) in literary and administrative texts from the Diyala region would help determining the extension of the orthographic trait *pi*/*pe* in the area. The corpus of letters from the Diyala region in ACCOB, excluding the early letters from Ešnunna published by Whiting[275], present nevertheless a regular way to represent the segments /pi/ and /pe/ with the sign BI. This writing practice, similar to the writing habits from northern Babylonian areas (and OB peripheral areas like Mari), also matches the spelling characteristics of other significant texts from the region such as the Laws of Ešnunna or the Stele of Daduša, in the middle Old Babylonian period.

3.4.2.1.3.2 The southern region

The general distribution of the variables (pi,pí) and (pe,pé) shows that while northern-related letters display a homogeneous predominance of one graphic sign (BI), the southern-related documents of the corpus alternate greatly between spellings using both signs PI and BI. The sign PI for /pi/ and /pe/ occurs more frequently in these texts, but instances of its counterpart (BI), occur in more than 40% of the total number of instances of the variables (pi,pí) and (pe,pé) in the southern sub-group of ACCOB.

The reasons why such spelling variation manifest itself mainly in southern-related texts have not been sufficiently examined yet. Factors contributing to this orthographic heterogeneity can be of a very diverse nature, including both language internal and external motivations. One aspect that needs to be borne in mind is the fact that the sources for southern instances of the variables belong largely to letters sent by individuals living during the time of Hammurabi and Samsu-iluna, a sociolinguistic environment in which the North was the politically dominant centre of Mesopotamia and the location from where some

[273] OBTI 302, 4. Transliteration from Streck and Wasserman, ibid. [accessed 01.05.2017]
[274] PNs and GNs excluded.
[275] In Whiting 1987.

'southern' letters were probably issued[276]. A closer examination of the instances in southern-related texts in ACCOB allows us to identify potential distributional issues and factors that influence the general fluctuation of orthographic variables. The data referring to early OB documents from southern areas was already analysed in section 3.4.2.1.1. For middle OB letters related to the southern area, some remarks need to be considered.

First, a number of southern locations are represented in ACCOB by letters where /pi/ and /pe/ are predominantly represented by the sign PI. To this group belong the letters from Uruk commented in 3.4.2.1.2 as well as the letters related to the city of Adab, whose 14 occurrences of the variables (pi,pí) and (pe,pé) are exclusively rendered by the sign PI[277]. It should be emphasized that both cities, Adab and Uruk, are poorly represented in the corpus and that their preference for the variant spellings *pi* and *pe* occurs only in 15 or 14 occasions respectively, which makes that any assumptions about OB scribal practices for epistolary documents in these locations should remain hypothetical.

On the other hand, the search for the variables in the better attested letters related to the sites of Larsa and Ur retrieves results that combine both spelling choices even though the grapheme PI is still more frequently represented than BI[278]. A more detailed account of these cases is presented in the following section 3.4.2.1.4.

Finally, the letters associated to the city of Isin in ACCOB stand out among the sub-group of southern cities in the corpus due to the fact that their only attested forms of the variables (pi,pí) and (pe,pé) appear represented by the sign BI. The search for the variables in these letters returns 13 occurrences of *pí* and one of *pé* for no cases of *pi* or *pe*[279]. This sets the occurrences of the variables from Isin together with those of the site of Kisurra (and maybe Umma), discussed previously for the early OB texts. However, most of the letters related to Isin in the corpus are not early OB documents, but are dated to the reign of Samsu-iluna

[276] For example, although Lu-Ninurta's are included in the southern-related group, they were probably sent from Hammurabi's central administrative headquarters. Another factor that can potentially bias the account of instances of the sign BI rendering /pi/ or /pe/ in southern OB letters is the often-unreliable categorization criteria for assigning texts into geographical groupings. Some of the letters in the Nippur sub-group in ACCOB are particularly subceptible to stem in fact from other locations. Thus, Kraus (1975) warns against some classification mistakes regarding letters from Nippur in AbB 5: 'Die Tafeln aus Nippur und Sippar wurden bei Eingang ins Museum sofort in verschiedenen Heften registriert und separat numeriert; jedoch ist offenbar eine gewisse Anzahl von Tafeln aus Sippar versehentlich unter die aus Nippur geraten und demzufolge falsch als solche, mit dem Sigel Ni., statt unter dem Sigel Si. numeriert worden' (Kraus 1972 [AbB 5], ix). Therefore, the geographical association of instances of BI for /pi/ such as *e-pí-iš*, *pí-ka* or DUB-*pí-ia* in AbB 5, 178 [a letter with other 'northern' orthographies such as *ṭú* and *aš-šu-mi-ia*] is to remain cautious.

[277] Notice that the transliteration *na-pí-iš-tum* in AbB 11, 142:5 needs to be emended to *na-**pi**-iš-tum*. Letters grouped under the Adab label could of course had been issued from other locations, see e.g., AbB 11, 135, whose writing is, according to Stol (1986), 'typical of Larsa' (Stol 1986, [AbB 11], 88, note 135a). The instances of the Adab group are *a-pi-ta-am* (AbB 5, 42:9'); [a]*l-pi* (AbB 11, 144:8); *e-pi*-[i(?)-ma(?)] (AbB 5, 35:2); *li-ir-pi-su-ú-ma* (AbB 11, 142:12); *na-pi-iš-tum* (AbB 11, 142:5); PI *e-em* (AbB 5, 56:3 (?)); *pi-i-ka* (AbB 5, 2:2'); *pi-i-k*[a] (AbB 5, 26:5); *p*[i-i]*š-tim* (AbB 11, 139:15); *pi-šu* and *pi*-[š]*u* (AbB 11, 135:10 and 22); *tu-up-pi-ia* and *tu-up-pi* (AbB 11, 137:6 and 7); and *e-pe-ša-am* (AbB 11, 138:12).

[278] Compare for examples the occurrences of *pi* in letters related to Ur in Table 21 with the following instances of *pí* in texts from Ur: DUB-*pí*, *hi-pí* and DUB-*pí* (AbB 14, 112:36 and 37); *pí-ha-ti*, *pí-ha-at-ka*, *pí-ha-at* and *pí-ha-at* (UET 5, 26:6, 12, 17 and 32); *e-le-ep-pí-i-im* (UET 5, 32:12); *na-pí-iš-ti-ia* (UET 5, 82:5'). Many other examples of BI for the variables (pi,pí) and (pe,pé) related to Larsa are commented in section 3.4.2.1.4, below.

[279] DUB-*pí-ia* (AbB 9, 231:31); DUB-*pí* and *ša-pí-ir* (AbB 9, 237:18 and 29); *ša-pí-ri-ia*, *ša-pí-ri*, *ša-pí-ri*, *š*[a]-*pí*-[r]*i-ia* and *ša-pí-ri-ia* (AbB 14, 88:1, 4, 13, 17 and 22); DUB-*pí* (AbB 14, 203:10); DUB-*pí-ia* (AbB 14, 204:36); *e-pé-ša-am* (AbB 14, 205:21); *pí-i* and DUB-*pí-ka* (AbB 14, 205:32 (x2)) and *pí-ha-ti-ia* (AbB 14, 206:28).

(second half of the XVIII century BCE). Once more, the number of instances representing the spelling of the variables in Isin are insufficient to determine the real extent of the apparent scribal preference for the 'northern' practice of rendering /pi/ and /pe/ by means of the sign BI[280]. Nevertheless, administrative texts from Isin dating to the reign of Samsu-iluna like those in Table 23, below, reinforce the impression that the orthography of middle OB texts from Isin outstands among other southern cities of Mesopotamia in the representation of the variables (pi,pí) and (pe,pé).

Table 23: Examples of instances of the variable (pi,pí) in administrative texts from Isin.

N.	Instance	Date	Text
1	*pí-ha-at*	Si 16	BIN 7, 192:9
2	*pí-ha-at*	Si 24	BIN 7, 198:14
3	*pí-šu-nu*	Si 24	BIN 7, 198:19
4	*pí-ha-at*	Si 27	BIN 7, 204:11
5	*pí-is-sà-ta-am*	Si 26	LB 960:13

The data from other southern-related letters in ACCOB, more significantly the letters from the archives of the OB site of Larsa, include an important number of instances of the 'northern' spellings *pí* and *pé* throughout the corpus. While it is true that some letters categorized into the southern group due to their apparent relation to a southern archive might be in fact mistakenly classified as southerners (either because the relation to an archive was erroneously inferred or because the place of submission of the letter and perhaps also the sender of the letter should be better linked to a different area), the heterogeneity in the use of BI and PI by certain individuals demonstrates the impracticability of a strict division North-South in the distribution of the variable. Moreover, different variant spellings can even co-occur within individual texts.

3.4.2.1.4 Variation within individual senders

The promiscuous usage of two alternative spellings for the variables (pi,pí) and (pe,pé), appears to be more characteristic of southern-related texts in the corpus of OB letters. While most OB letters in ACCOB from a single sender contain only one variant spelling for /pi/ and /pe/, there are a number of interesting exceptions. The analysis of the texts from individuals whose letters convey spelling variation of the variables (pi,pí) and (pe,pé) might help determining the factors involved in such orthographic asymmetry. It should be stressed that possible motivations for the use of two alternative signs in the correspondence issued by a single individual might vary greatly, and our present knowledge of key aspects about the conditions in which most letters were written is not good enough to determine the precise circumstances that influenced in this variation. Factors of mobility, change of scribes, addressees, pragmatical and textual conditions, as well as internal linguistic constraints can affect, at some level, the choice of graphic representation of a variable.

However, it is expected that some relevant information can be gained from the observation of the data from texts in ACCOB, and especially from a considerably large group of letters belonging to a well-kwnon figure that stands out for its striking quantity of mixed instances

[280] One potential factor that could have effects on the distribution of the variables in the letters from Isin, apart from the insuffienct knowledge about the identity of senders and place of submission of the letters, is the poor diversity of lexical items represented in the survey: the words *tuppum* (5 times) and *šāpirum* (6 times) make up for 11 out of the 13 instances of BI for /pi/ and /pe/ in the letters from Isin. For remarks about lexical constraints in the variable (pi,pí) see next section.

of both variant signs BI and PI for the syllabic segment /pi/. It is the case of the correspondence sent by Lu-Ninurta, a high official in Hammurabi's court, whose orthographic features have been discussed previously in sections 3.3.4.1 and 3.3.4.2 regarding the variable (ṭú,ṭù). In the 64 letters from Lu-Ninurta included in ACCOB, 28 instances of *pí* and 26 of its counterpart spelling *pi* are found. This constitutes the clearest example of a seemingly random choice from within the repertoire of two signs for the variable (pi,pí) in one single issuer of OB letters in the corpus. This impression is reinforced by examples of one single text in which both spellings co-occur mingled together, such as in the following fragment from letter AbB 4, 131:

> *a-na* É-*a-ga-mil ša-**pi**-ri*-[……] BÙR I[K]U A.ŠÀ-*lam ṣi-ba*-[……] *iš-tu ta-ta-ap-la-šu-nu-ti me-hi-ir* DUB-***pí**-ia šu-bi-la-nim* (AbB 4, 131:23-26)[281].

The spelling variability within archives and especially within individual documents like Lu-Ninurta's letters pose a challenge for a strict interpretation of the proposed North-South division of OB orthographic traits, as remarked by Lieberman (1971)[282]. This irregularity can be even regarded as an argument against the reliability of orthographic variables as a means to infer the sociohistorical circumstances of the edition of an OB text, particularly its place of origin. A quantitative analysis of the distribution of variables, like the present study, aims to refine the grade of validity of impressionist associations between textual and extra-textual variables. Thus, a key part of this process is the examination of those particular cases where variation occurs most. In this sense, the distribution of the 44 instances of /pi/ in the whole group of letters sent by Lu-Ninurta constitutes the best study case to analyse the level of randomness that operates within one group of letters.

The starting point of the analysis is the examination of the textual and orthographic contexts in which both variants occur in Lu-Ninurta's letters. The observation of certain correlations between the spellings *pí* and *pi* and other orthographic and linguistic variables in the 64 letters sent by Lu-Ninurta (see Table 24, below) suggest that, despite a considerably high level of intertwinement of orthographic features typically related to northern or southern letters, not all the documents of Lu-Ninurta's correspondence present the same level of 'northernness' or 'southernness'[283].

On one side of the spectrum, we find documents like AbB 4, 50. While this short text does not present any typically 'southern' instances of the sign PI rendering /pi/, it contains paradigmatic 'northern' features that include the spelling *pí* (sign BI) in *pí-il-ka-tim* (l. 6), *pí-qá-at* (l. 8), DUB-*pí* (l. 11), *pí-il-ka-tim* (l. 11). Furthermore, it is also one of the five letters in Lu-Ninurta's correspondence that displays a VC-syllabogram for the so-called phonetic complement accompanying the term A.ŠÀ 'field': A.ŠÀ-*am* (line 14). This contrasts with the overwhelming use of CVC complements of the type A.ŠÀ-*lam* throughout Lu-Ninurta's letters, an orthographic characteristic often associated with southern OB letters[284]. Another 'northern' feature in AbB 4, 50 is the form of the demonstrative adjective *šu-a-ti* (l. 14), which opposes the form *šâti*, frequent in other letters from the same individual. Similarly, another letter from Lu-Ninurta, AbB 4, 111, also

[281] The translation given in AbB 4 is: '[Ihrem] Chef Ea-gamil fügt ein Feld (von) eine(r) Hufe hinzu! Sobald ihr sie abgefertigt haben werdet, schickt mir Antwort auf meinen Brief!' (Kraus 1968 [AbB 4], 85).
[282] Lieberman 1971, 88.
[283] The epigraphic properties of the texts are also not completely uniform throughout the group of documents attributed to Lu-Ninurta, c.f. e.g. AbB 4, 111 against AbB 11, 173. A proper palaeographic analysis of the different texts would play a decisive role in providing very relevant information, but it exceeds the limits of the present study which focus exclusively on orthographic and linguistic variation.
[284] See section 3.6 and Hernáiz (in press).

contains exclusively the variant spelling *pí* for /pi/: *pí-ha-tim* (l. 14), *pí-i* (l. 19), DUB-*pí-im* (l. 19), DUB-*pí-im* (l. 27); and the demonstrative *šu-a-ti* (l. 19). Moreover, it includes the only instance of the sign TU for /ṭu/ in Lu-Ninurta's letters that does not occur in greeting formulae or as part of the graphic rendering of the predicate *ṭuppûm* (see 3.3.4.1): *šu-ṭú-ur-ma* (l. 27)[285].

On the more 'southern-like' side of the spectrum in Lu-Ninurta's letters we find texts such as AbB 4, 57 or AbB 4, 130. In the first one, the only occurrence of /pi/ is written with the sign PI: *pi-il-ka-at* (l. 9), the sign DU is used to render /ṭu/: *iš-ṭù-ru* (l. 10), and the only attested phonetic complement is of the type CVC: A.ŠÀ-*lam* (l. 8). Furthermore, the short letter contains the demonstrative form *ša-a-ti* (l. 13) and the lexical item *unnedukkum* 'letter' (l. 11), a noun characteristic of southern OB texts[286]. Letter AbB 4, 130 also presents features that would suffice to set it among paradigmatic southern-related texts in the corpus: /pi/ is represented by the sign PI: *pi-i* (l. 22), DUB-*pi* (l. 22); the phonetic complement for the term *eqlum* 'field' is always a CVC sign denoting the phoneme /l/: A.ŠÀ-*lim* (l. 6 and l. 25); and there is even an occurrence of the sign DI to render /ṭe/ in *i-ṭe-eh-hi* (l. 27)[287]. Finally, letter AbB 9, 200 also includes typically southern traits such as *ša-a-ti* (l. 6), A.ŠÀ-*lam* (l. 7) and A.ŠÀ-*lim* (l. 13), the sign DU in *ṭù-ur-da-am* (l. 19) and four instances of PI for /pi/: *pi-i* (l. 6), DUB-*p*[i] (l. 6), DUB-*pi-ka* (l. 8) and DUB-*pi-ia* (l. 9). Only in one case is /pi/ rendered by the sign BI, and it is for the same term *tuppum* 'tablet': DUB-*pí* (l. 13), realised on three other occasions in the same text by the sign PI. The letter, while bearing an important number of characteristic southern-related traits, includes an instance of variation in the variable (pi,pí). In fact, most other letters from Lu-Ninurta behave orthographically in the same way, which makes his correspondence particularly salient in the corpus of OB letters, especially if we take into account the fact that most of the documents were regularly sent to the same individual, Šamaš-hazir (in Larsa), and address similar administrative issues. A comparison with the group of letters sent by King Hammurabi to the same addressee in relation to similar topics enable us to highlight the great contrast that existed in orthographic and linguistic traits in similar letters sent to Larsa emanating from the central administration at the time of Hammurabi. Indeed, the royal letters sent by the king do not contain one single occurrence of most the typical features pointed in the 'southern-like' texts from Lu-Ninurta, such as the spellings *ṭù* or *pi*, the form of the demonstrative *šâti*, or the lexical item *unnedukkum* 'tablet, document'[288]. The particular personal situation of Lu-Ninurta, who had been active in (and probably originated from) the southern reign of Larsa, but that at the time when the letters were issued was established and active in the Babylonian central administration, can be invoked as an important factor for the greater variability of traits in his letters.

The correspondence sent by Lu-Ninurta is not the only case in which inconsistency in the choice of orthographic variables like (pi,pí) exists. Other issuers of letters that show irregular orthographic rendering of variables might have been influenced by similar personal and sociolinguistic conditions, but this is hard to determine based on what we know about OB letters and senders included in ACCOB. Lu-Ninurta, despite the differences between some of his letters, seems to be mainly based in Babylon. In other cases, where travelling across different areas of northern and southern Mesopotamia was

[285] Transliterations of *ṭú* for the noun *tuppum* in the editions of the letters have not been included. See remarks in 3.3.4.1.2.
[286] See, i. a., Veenhof 2005 (AbB 14), xiii.
[287] TE is also attested in the same letter in l. 21: *ša-ṭe₄-er*.
[288] The phonetic complement for A.ŠÀ in the letters sent by Hammurabi is also overwhekmingly realised by a VC-sign, expept for two cases (see 3.6.3.2).

involved, the different location from where letters were issued could imply the use of different scribes, and ultimately, to different orthographic peculiarities. Nonetheless, orthographic variation in texts from individual senders can be associated to a larger variety of motivations. In section 3.3.4.2, it was observed that, for the uneven distribution of the variable (ṭú,ṭù) in some OB letters, the occurrence of the more typically northern spelling *ṭú* often correlates in southern letters with particular lexical items (i.e. forms of the predicate *balātum* from greeting formulae), suggesting in that case that the orthographic shape of some items could be more readily transferred than others, perhaps due to the methods of scribal education for the particular period covered by the letters, and the greater influence of certain copying models over others.

Quantitatively speaking, for the variable (pi,pí) the letters from Lu-Ninurta shows an almost balanced number of occurrences for both signs BI and PI. However, as it was noticed above, some of the letters containing orthographic and linguistic traits that are infrequent in southern-related texts from ACCOB (such as AbB 4, 50 and AbB, 111) present a seemingly consequent preference for the more northern-like variant spelling *pí* (sign BI). In other letters, it is the sign PI the one that predominates, occurring alongside other traits typically related to southern OB texts (AbB 4, 57, AbB 4, 130 and AbB 9, 200). The overall picture, however, presents a highly mixed number of occurrences of *pí* and *pi*. Table 24, below, shows all the attestations of the variable (pi,pí)[289] in the 64 letters from Lu-Ninurta included in ACCOB, along with other relevant orthographic and linguistic features typically found in either northern or southern-related letters, including the phonetic complementation of A.ŠÀ (see section 3.6), the demonstrative *šuāti/ šâti*, the noun *unnedukkum*, the orthography of the prepositional phrase *aššumīya* (see section 3.7), and the variables (ṭú,ṭù) and (ṭe,ṭe$_4$).

Table 24: Orthographic and linguistic characteristics of letters from Lu-Ninurta in ACCOB that contain the segment /pi/[290].

Letter	Sign BI	Sign PI	+ 'northern' traits	+ 'southern' traits
AbB 4, 46		*pi-ha-as-sú-nu*		
AbB 4, 49		*pi-qá-at*		A.ŠÀ-CVC
AbB 4, 50	*pí-il-ka-tim*, *pí-qá-at*, DUB-*pí*, *pí-il-ka-tim*		A.ŠÀ-*am*, *šuāti*	
AbB 4, 51	*pí-ha-tim*			A.ŠÀ-CVC (x 2), DU for /ṭu/; *šâti*?
AbB 4, 52	DUB-*pí*	*ṭú-up-pi*		A.ŠÀ-CVC (x2)
AbB 4, 53	DUB-*pí-ia*	*e-pi-iš*		A.ŠÀ-CVC
AbB 4, 54	*ši-pí-ir-šu*		A.ŠÀ-*am*	
AbB 4, 55	DUB-*pí-ia*			A.ŠÀ-li-šu, A.ŠÀ-CVC; *šâti*
AbB 4, 57		*pi-il-ka-at*		DU for /ṭu/, *šâti*, *unnedukkum*
AbB 4, 61	DUB-*pí*?[291]			A.ŠÀ-CVC (x2)

[289] The form /pe/ is not attested in the transliterations of the letters from Lu-Ninurta in ACCOB.
[290] Transliterartions of the term *tuppum* 'tablet' and the predicate *ṭuppûm* have not been including in the account of traits containing /ṭu/. Also, while the sign *ṭe* is included in the 'southern'-traits column, the sign *ṭe$_4$*, widespread in both northern and southern letters has not been accounted for.
[291] In broken context.

Letter	Sign BI	Sign PI	+ 'northern' traits	+ 'southern' traits
AbB 4, 62		*ṭú*-[u]*p-pi*		*šâti*, A.ŠÀ-CVC (x3),
AbB 4, 63		*pi-i*		A.ŠÀ-CVC
AbB 4, 68		*šu-up-pi-il-ma*		*šâti* (x2), A.ŠÀ-CVC (x5),
AbB 4, 69	DUB-*pí*			DU for /ṭu/: A.ŠÀ-CVC (x4),
AbB 4, 111	*pí-ha-tim*, *pí-i*, DUB-*pí-im*, DUB-*pí-im*		TU for /ṭu/, *šuāti*	
AbB 4, 113		*na-pi-iš-ta-am*		
AbB 4, 114		*ṭú-up-pi-ia*		DU for /ṭu/,
AbB 4, 117		*ṭú-up-pi*		
AbB 4, 118	DUB-*pí*, [DU]B-*pí*		TU for /ṭu/	
AbB 4, 125	DUB-*pí*, DUB-*pí-i*[a]	*pi-ha-at*	*šuāti*; A.ŠÀ-im, A.ŠÀ-um, A.ŠÀ-am (x2)	A.ŠÀ-CVC (x2)
AbB 4, 126		DUB-*pi*		DU for /ṭu/; A.ŠÀ-CVC
AbB 4, 130		*pi-i*, DUB-*pi*		A.ŠÀ-CVC (x2); DI for /ṭe/
AbB 4, 131	DUB-*pí-ia*	*ša-pi-ri*-[...]		A.ŠÀ-CVC (x2)
AbB 4, 154	*a-pí-il?*,	DUB-*pi*	*šuāti*; A.ŠÀ-*am*; TU for /ṭu/	A.ŠÀ-CVC (x4), A.ŠÀ-*el*
AbB 8, 3	[DU]B-*pí*, DUB-*pí*, D[UB-p]*í*			
AbB 8, 73		*na-pi-iš-tam*		*šâti*, A.ŠÀ-CVC x2
AbB 9, 200	DUB-*pí*	*pi-i*, DUB-*p*[i], DUB-*pi-ka*, DUB-*pi-ia*		DU for /ṭu/; *šâti*; A.ŠÀ-CVC (x2)
YOS 15, 32	DUB-*pí*, DUB-*pí-ia*			A.ŠÀ-CVC; DU for /ṭu/
YOS 15, 33		*pi ṭú-up-pi-i-šu*[292]		A.ŠÀ-CVC
YOS 15, 34		DUB-*pi*, DUB-*pi*		
YOS 15, 36	DUB-*pí-ia*			A.ŠÀ-CVC (x3); *aš-šum-ia*

The data in Table 24 allow for some observations.

First, the same lexical items can often be rendered by different signs of the variable (pi,pí): ***pi***-*qá-at* / ***pí***-*qá-at*; ***pí***-*i* / ***pi***-*i*; ***pí***-*il-ka-tim* / ***pí***-*il-ka-at*; DUB-***pí*** / DUB-***pi***. Sometimes the contrast occurs within the same document (see DUB-*pi* /DUB-*pí* in AbB 9, 200). This suggests that the different graphic renderings of /pi/ by Lu-Ninurta's scribe(s) are not immediately recognisable as being motivated by phonological differences between specific

[292] I thank Prof. Veenhof for sharing his transliteration of this form.

lexical items[293]. Similarly, the identical phrasal context in the occurrence of DUB-*pí* (sign BI) and *ṭú-up-pi* (sign PI) in AbB 4, 52:3' and 10'[294] suggests that the spelling difference between both forms does not respond, at least here, to morphological or morpho-phonological motivations. In other words, the form *tuppī* in both instances does not indicate, for example, a distinction between a plural oblique inflected form of the noun (e.g. *tuppī*, noun.OBL.PL.) and a genitive structure (*tuppī*, noun-GEN.1 SG.).

Second, northern-related traits (third column) are not as frequent in Lu-Ninurta's letters as traits that characterise southern OB letters (fifth column). While 'northern' and 'southern' elements co-occur in many letters, especially with respect to those traits considered more orthographic than linguistic in this study (such as the variable (pi,pí) or the form of the phonetic complement), a few letters stand out in the list because of their salient northern-like traits. It has already been observed that letters such as AbB 4, 50, AbB 4, 54 and AbB 4, 111 are very similar in their orthographic and linguistic traits to northern letters like the ones sent by King Hammurabi, probably from the same central administration at Babylon. Crucially, these three 'northern' letters in Lu-Ninurta's correspondence contain the richest variety of lexical items rendered by BI in Table 24: *ši-pí-ir-šu, pí-il-ka-tim* (x2), *pí-i, pí-ha-tim* (x2) *and* DUB-*pí-(im)* (x3). By contrast, in letters that contain typically southern traits and where, therefore, it would be expected to find the sign PI for the segment /pi/, the sign BI also occurs frequently. However, in this case *pi* is mainly employed in the rendering of the term *tuppum*. Thus, in the whole group of letters from Lu-Ninurta, excluding the ones more clearly related to the North (AbB 4, 50, AbB 4, 54, AbB 4, 111), the spelling *pí* (sign BI) appears once in the form *pí-ha-tim* (AbB 4, 51) and perhaps also once in *a-pí-il*[295] (AbB 4, 154), against a total of 17 times in the writing of the word *tuppum*. In other words, the sign BI in spellings of the noun *tuppum* is the most frequent 'northern' element occurring in letters that do not present otherwise any further 'northern' defining traits.

Third, the letters attributed to Lu-Ninurta in the corpus are peculiar in the display of both elements of the variable (pi,pí). Although some observations about the distribution of the instances can be tentatively drawn to explain some of the apparently random occurrence of the variant spellings, the number of texts in which both spellings *pi* and *pí* co-occur within the same tablet in Lu-Ninurta's correspondence is salient in comparison with the rest of OB letters. In the 64 letters in ACCOB issued by Lu-Ninurta, six of them carry both variants in the same text: AbB 4, 52; AbB 4, 53; AbB 4, 125; AbB 4, 131; AbB 4, 154 and AbB 9, 200. Meanwhile, a survey on the transliterations given for all the other letters included in ACCOB and on the letters from AbB that are not part of ACCOB[296] resulted in just 12 more tablets that also contain at least one instance of both signs BI and PI to render either /pi/ or /pe/[297]. This implies that the group of letters by Lu-Ninurta account for a third of all

[293] It should be stressed that contextual and supra-segmental elements or any kind of oral variability caused by processes of language change (within individuals or within communities of speakers) that could influence the choice of spelling variants, are, however, not considered here.

[294] *i-na tu-up-pi ṭú-*[up-pu]*-šu-nu-ši-im* (AbB 4, 52:3'-4'); *i-na* DUB-*pí ṭú-up-pu-šu* (AbB 4, 52:10'-11'). The translations provided by Kraus in AbB 4 are respectively: 'Das Feld ist ihnen urkundlich zusätzlich zugeteilt' and 'sein Feld, das ihm urkundlich zusätzlich zugeteilt ist' (Kraus 1968 [AbB 4], 35-37).

[295] For the transliteration of *a-pí-il* in AbB 4, 154 see note 154b in Kraus 1968 (AbB 4), 102.

[296] The present study relies on transliterations published in the main editions of the letters, especially in AbB. Only a few of the original tablets or copies have been collated for the present study, and therefore possible transliteration mistakes, such as failing to note the accent in the transliteration of a sign e.g. ***pí***, might remain. However, even if the exact account of instances can vary after emendations of readings or transliterations of some documents, it is foreseeable that the basic difference in quantitative terms provided in the overall picture would remain relevant.

[297] It is here reminded that personal, divine or gegraphical names are not included in the survey.

the occasions that both variant spelling types co-occur in more than 3500 OB letters analysed. It should be noticed, however, that a majority of the letters in the corpora correspond to documents stemming from northern archives, where BI is common the only variant spelling to render /pi/ and /pe/.

Table 25: Letters in ACCOB and AbB, excluding those sent by Lu-Ninurta, in which the signs BI and PI are both employed to represent /pi/ or /pe/.

N.	Letter	Sign BI	Sign PI	Sender	Related location
1	AbB 14, 112	DUB-*pí* DUB-*pí* *hi-pí*	*pi-qá-at*	Ahum-waqar	Ur
2	AbB 14, 111	*e-pí-iš*	*e-pe-šum*	Rīm-Sin-[x]-šu	Larsa?
3	AbB 14, 163	DUB-*pí* DUB-*pí*	*pi-hi-a*	Šamaš-hazir	Larsa
4	AbB 14, 164	DUB-*pí*	*pi-qá-at*	Šamaš-hazir	Larsa
5	AbB 4, 140	DUB-*pí* *pí-i*	*e-pe-ši-im* *e-pe-ši-im* *e-pe-ši-im*	Šamaš-hazir	Larsa
6	UET 5, 68 [298]	*i-pé-e*-[…]?	*te-pe-e*	Unknown	Ur
7	AbB 9, 40	DUB-*pí*	DUB-*pi* *e*-[p]*e-ši-im*	Watar-Šamaš	Larsa?
8	AbB 9, 114	*ša-pí-ir* *ša-pí-ir*	DUB-*pi* DUB-*pi-ia*	Watar-Šamaš	Larsa?
9	AbB 6, 140	DUB-*pí*	*li-ša-ap-pi-a-am*	Beletum	Larsa? Ur?
10	AbB 10, 144	*pí-ša-na-ki* *ši-p*[í]-*š*[u]-*ú*	*a-pi-il-ki*	Sin-eribam	?
11	AbB 10, 197	DUB-*pí* DUB-*pí*	*e-pi-iš*	Sin-muštešer	?
12	AbB 14, 139	DUB-*pí-ka-ma*	*e-pi-ri*	Sin-remeni	?

Table 25 lists the individual texts in ACCOB and AbB that contain at least one instance of both signs BI and PI representing the variables (pi,pí) and (pe,pé). It is noteworthy that, similarly to what was observed in the mixed letters from Lu-Ninurta, on the column of items rendered by BI in Table 25 the term *tuppum* is the most frequently attested form, occurring 11 times. At the same time, *tuppum* is rendered by PI on three occasions, one of them in a letter (AbB 9, 40) that also contains the term written with the sign BI. However, as was also attested in Lu-Ninurta's letter AbB 4, 154, a counterexample to that tendency also exists in instance 8 of Table 25, where one letter presents the sign PI representing a form of the noun *tuppum* and the sign BI for a different lexeme.

If the six letters from Lu-Ninurta that contain both spellings *pi* and *pí* are added to the texts listed in Table 25, the term *tuppum* is the lexeme represented in 17 out of 26 of the instances in which the sign BI appears in letters that contain also contain PI for /pi/ or /pe/. By contrast, *tuppum* is rendered barely 8 times with PI from a total of 27 occurrences of *pi* or *pe* in these letters.

[298] Probably a school letter. See Kraus 1959, 28-29.

3.4.2.1.5 Conclusions

The orthographic rendering of the segments /pi/ and /pe/ in OB letters from the ACCOB corpus includes two different syllable-signs: BI (*pí, pé*) and PI (*pi, pe*). The analysis of their distribution according to geographical variables supports the widely-held assumption that the latter spellings, *pi* and *pe*, are proper to southern orthographic practices. The letters analysed provide, however, some specificities that should be noticed.

First, not all southern texts employ the sign PI for /pi/ and /pe/. The most frequent exceptions correspond to early OB letters related to the southern city of Kisurra and letters from the middle OB period from Isin, where the alternative sign BI is the only option prominently attested in the texts from the corpus. Letters related to other southern locations, either on the early OB period or in later chronologies, often present some degree of intertwined occurrences of both spellings.

Second, three instances of the sign PI rendering /pi/ and /pe/ in early OB letters from Ešnunna published in Whiting 1987 constitute the most reliable exceptions to the pattern by which the spellings *pi* and *pe* occur only in southern OB letters. The same group of early letters also contains cases where the alternative graphic rendering of the segment by means of the sign BI is chosen. Later letters associated to archives from the Diyala region, where Ešnunna is located, do not return any token of *pi* or *pe*, whilst the counterpart spellings *pí* and *pé* are well attested. Other paradigmatic OB texts from the same area, such as the tablets containing the Laws of Ešnunna or the text from the Stele of Daduša, behave orthographically in the same way as later letters with regards to the variables (pi,pí) and (pe,pé). Personal names, not included in the analysis, show a clear contrast with the rest of elements of the texts and show consistently the sign PI, among other names, in the royal name Ibal-pi-El.

Finally, besides individuals whose letters in ACCOB contain exclusively one or the other spelling forms for the variables (pi,pí) and (pe,pé), there are groups of documents issued by a single issuer or sender that contain different spelling options for what appears to be a graphic representation of the same syllabic segments. Variation in this case can occur in different levels. It can affect either different letters from the same archive, letters from the same individual or, in some cases, the variation can involve items written in one single document. Factors that could potentially contribute to exert an effect on the variability on each level vary correspondingly.

Letters from the same archive that contrast with each other but are internally coherent in their orthographic elements can be expected to belong in fact to a different sphere of scribal practice, probably related to a different geographical environment[299]. The group of letters sent by Atahzum, probably found in Sippar but featuring typical orthographic traits such as *ṭù* or *pi*, widespread in southern Mesopotamian letters, constitutes an example of this (see 3.3.4.3 and 3.4.2.1).

Similarly, a clear-cut distribution of features occurring in specific letters from one single individual can also replicate the effect of different conditions involved in the process of issuing the letter, perhaps related to the work of different scribes. These extra-textual variables are very difficult to control for, but detailed epigraphic studies and information about scribal education can shed light on these matters. In the letters from the corpus analysed, some documents in the correspondence of Lu-Ninurta contrast with other from

[299] Different scribal practices in the orthography of documents from the same location are also plausible, but as far as the present study on OB letters is concerned, there is no clear evidence of it.

the same group in their choice of orthographic and linguistic variables, some being formally very close to contemporary royal letters from Babylon and others presenting stereotypical southern characteristics.

However, many OB letters provide cases in which 'southern-like' and 'northern-like' variants co-exist in the same document. Some of these instances occur for the same lexical items[300] and provide reasons to believe that the variability in the choice of graphic elements for the variables (pí,pi) and (pe,pé), at least in these cases, do not respond to either morphological or inter-lexical motivations. A phonological motivation for the graphic distinction between *pi*/*pe* and *pí*/*pé* due to lenition of the bilabial voiceless stop /p/ into a fricative or approximant consonant, suggested i.a. in Goetze 1945 and Von Soden 1968, cannot be proved or dismissed based on the variation observed in OB letters. The occurrence of diverse spellings for the variables (pi,pí) and (pe,pé) in the same type of lexical items and within the same single documents might be regarded as the endorsement of conflicting spellings co-existing in certain scribal repertoires[301]. However, the original motivation, phonological or else, for the graphic shape of signs in each of the scribal repertoires cannot be inferred with certainty. The exploration of the cases of co-occurrence of the signs BI and PI to denote /pi/ and /pe/ in the transliteration of letters from ACCOB and AbB reveals that the term *tuppum* accounts for 17 out of 26 of the instances of the sign BI and 8 out of 27 instances of the sign PI in these letters. Furthermore, an admixture of these signs is more frequently found in the letters issued by Lu-Ninurta, particularly salient in this respect, which might be related with personal mobility and geopolitical circumstances of the time. He is assumed to be a southerner actively sending letters from the central administration in the North. We do not know who was involved in the writing of these texts, but the constant occurrences of southern orthographic traits in most of his letters suggest that one or more scribes connected to southern scribal practices might have been responsible for most of them. At the same time, being established in the central administration, northern orthographic practices could have surrounded and perhaps affected to some degree the orthographic repertoire of the scribes/s, resulting in a particularly diversified display of orthographic and linguistic traits.

3.5 The spelling of velar emphatic stops

The Sumerian writing system did not include a distinctive graphic sign to represent a back stop consonantal phoneme, transliterated *q*, proper of the Akkadian language. This phoneme is commonly termed 'emphatic' in the literature, but the articulatory characteristics of the sound in Akkadian are still not universally agreed upon[302]. It is described as a velar 'ejective' stop consonant in Von Soden 1995[303] and, more recently, as

[300] See e.g. signs PI and BI in letter AbB 4, 52: *i-na ṭú-up-**pi** ṭú*-[up-pu]-*šu-nu-ši-im* (lines 3'-4') and *ša i-na* DUB-***pí*** *ṭú-up-pu-šu* (lines 10'-11').

[301] Merely orthographic repertoires, unless we assume that at the oral level the same variability existed in the language of an individual or a group, such as in situations of dialect contact or dialect levelling.

[302] No spatial, chronological or other lectal variation for the phoneme /q/ have been questioned yet for the Old Babylonian language.

[303] Von Soden 1995 (GAG[3] §28a), 34. Von Soden and Röllig 1991 compare the phoneme to: '*ġ* wie in modernen arabischen Beduinendialekten' (Von Soden and Röllig 1991, xx).

a ‘palatal glottalized stop’ consonant in the description of Old Babylonian by Streck (2014)[304].

In any case, irrespective of other potential motivations for spelling variation, the lack of a common and unique way to represent the phoneme /q/ in the Akkadian syllabary, as it was the case for the representation of /ṭ/, led to variation in the orthographic form of CV and CVC signs[305].

3.5.1 /qi/ and /qe/

The work on the Akkadian syllabary by Soden and Röllig (1991) includes the reference to an orthographic difference between northern and southern Old Babylonian texts in the representation of the segments /qi/ and /qu/. While K-signs, i.e. KI and KU would represent /qi/ (*qî*) and /qu/ (*qú*) in the North, in the South G-signs would be occur for the same function: GI (*qì*) and GU (*qù*)[306].

In the OB letters in ACCOB, the forms *qí* and *qé* (KI) are widely attested in all of the general geographical areas in which texts are subdivided. In fact, the variants *qì* and *qè* occur only sporadically, which makes it difficult to determine any pattern of distribution. Nevertheless, the data from the corpus of letters does not reflect a clear-cut geographical differentiation for the variables (qí,qì) and (qé,qè).

Table 26, below, lists the few instances of GI for /qi/ or /qe/ in the corpus. The use of GI for /qi/ or /qe/ appears associated first to the early OB letters in the archive of Ešnunna[307]. It is also attested in an early letter from Nippur (number 1 in Table 26)[308]. However, these instances are neither restrained only to the areas of Ešnunna or Nippur nor an archaism proper of early texts[309]. Further instances of the sign GI for /qi/ or /qe/ that relate to the southern site of Nippur but also to the northern site of Sippar, occur in texts dated as late as the reign of Ammi-ṣaduqa (numbers 14 and 15 in the table).

Table 26: Instances of qì *and* qè *in the letters from ACCOB*

N.	Instance	Letter	Related place
1	*i-il-**qì***	Abb 5, 156:13	Nippur?
2	***qì**-iš-ti-ku-nu*	UET 5, 76:18	Ur
3	*ni-**qì**-a-am*	AS 22, 37:5	Ešnunna
4	*a-na-a-**qì***	AS 22, 37:7	Ešnunna
5	*ú-li-le-**qì***	AbB 11, 27:13	Nippur
6	*le-**qì**-e-ma*	AbB 9, 9:19	?
7	*ni-it-ta-ar-**qì**-i*(?)	AbB 6, 76:5'	Sippar
8	*lu-ul-**qì**-ma*	AS 22, 3:3’	Ešnunna
9	*ta-pa-**qì**-di*-(iš(?)-)ši(?)(-ma(?))	AbB 5, 195	Nippur?
10	*le-**qè**-e-ma*	AbB 9, 130:21	Sippar?
11	*i-la-**qè**-a-ma*	AbB 12, 53:15'	Sippar?
12	*le-**qè**-ma*	AbB 12, 57:24	Sippar?

[304] Streck 2014, 17. Streck interprets the OB phonemes /k/ and /g/ to be also palatal stops. The chart in Streck 2014 (page 17) provides also the following information about the ‘traditionelle Aussprache’ of the phoneme /q/: ‘arabisches *q*, d.h. als Velar’.
[305] Von Soden and Röllig 1991, xx.
[306] Von Soden and Röllig 1991, xxxi.
[307] See Whiting 1987. For other early OB orthographies see Westenholz 1983, 224-226.
[308] See J. Westenholz 1983, 224, note 26.
[309] Cf. J. Westenholz 1983, 224: ‘An archaism preserved in Nippur is GI = /qi/’.

13	*le-**qè**-ma*	AbB 11, 4:6'	Nippur
14	*el-te-**qè**-ma*	MHET 1/1 82:34	Sippar
15	*i-le-**qè***	MHET 1/1 82:40	Sippar

Other examples from letters in AbB not included in ACCOB[310] are also not conclusively associated to only one specific region, as far as their archival and orthographic information can suggest. It is, however, worth noting that the letters associated to archives from Nippur, scarcely represented in the total account of OB letters in ACCOB, provide in fact a considerable part of the cases of the spellings *qì* and *qè*.

The sign GI$_4$ is also attested in ACCOB rendering the emphatic segments /qi/ and /qe/. In this case, the only four instances in the corpus: *ʿe*ʾ*-le-qi$_4$-ma* (AbB 5, 189:7); *li-qi$_4$-a-ma* (AbB 5, 175:19); *qe$_4$-er-bi-tim* (AbB 11, 11:9) and *le-qe$_4$-ma* (AbB 11, 3:2') are all related to archives from Nippur[311].

3.5.2 /qu/

The occurrences of the sign GU rendering the segment /qu/ in the OB corpus of letters ACCOB are, similarly to those of *qì* and *qè*, quantitatively very limited. In this case, most of the instances of *qù* do appear to be associated with southern locations, as Table 27 shows.

Table 27: Instances of qù *in letters from ACCOB*

N.	Instance	Letter	Related place
1	***qù**-ul-lu-lim*	AbB 14, 165:14	Larsa
2	*aš-**qù**-lu-ú*	AbB 10, 74:16	Lagaba?[312]
3	*a-sa-ni-**qù***	AbB 5, 159:15'	Nippur?
4	*dam-**qù***	AbB 4, 154:26	Larsa
5	*il-**qù**-ni-iš-ši-ma*	AbB 14, 205:25	Isin
6	*re-**qù**-us-su*	AbB 11, 153:20	Nippur
7	*il-**qù**-ú*	AbB 4, 138:9	Larsa
8	*šu-uq-**qù**-ul*	AbB 10, 69:21	south[313]
9	*mu-**qù**-ut-ma*	AbB 11, 15:5	Nippur

However, the evidence from ACCOB is very limited for this variable. A search on the letters from AbB not included in ACCOB returns some more examples from texts supposedly related to southern OB locations[314], but they also appear to be other instances of *qù* in letters that are not straightforwardly associated to that area[315].

[310] AbB 2, 132:13; AbB 6, 90:10; AbB 6, 106:10; AbB 7, 11:5; AbB 9, 1; AbB 9, 119:9'; AbB 9, 228:27; AbB 9, 240:9 (the letter, probably from Nippur, also contains *qi$_4$* in the form *qi$_4$-bi-šum-ma*); AbB 11, 39:9'; AbB 12, 53:15'; AbB 12, 89:10; AbB 14, 14:10; AbB 14, 74:12; AbB 14, 75:21; AbB 14, 75:16 and AbB 14, 75:31.

[311] See also in AbB: *qi$_4$-bi-šum-ma* in AbB 9, 240 from Nippur, and AbB 3, 113:12.

[312] Although tentatively related to the site of Lagaba, letter AbB 10, 74 contains also a feature typically found in southern-related letters: a nasalized stop consonant (see chapter 5).

[313] Kraus (1985) describes text AbB 10, 69 among others as 'alt-südbabylonisch', and explains 'Beruhen auf orthographischen und lexicalischen Besonderheiten des Briefes' (Kraus 1985 [AbB 10], xv, note 1).

[314] AbB 9, 228:9.

[315] AbB 4, 148:12 and 13; AbB 7, 60:10; AbB 7, 64:9; AbB 14, 109: AbB 14, 114:8 and 22; AbB 14, 140:9 and AbB 14, 74:18.

The spellings *qù* and *qì*/*qè* co-occur in the correspondence of two individuals. The first one is Akatiya, sender of letter AbB 9, 228, probably from Nippur[316]. The second case belong to the correspondence of Ilima-ilum[317]. About the place of origin of the letters from Ilima-ilum Veenhof (2005) notes:

> The letters treat domestic issues, at time with emotion and a literary flavour (73:8-14, 75:24ff.), and mention several persons, but there are no good clues for their provenience, unless one takes the mention of "the gate of Samas" (74:22) as referring to Larsa. (…) Archival coherence can be explained by assuming that both Iddi and Dumuq-Šamaš belonged to the writer's household and that the letters written when Ilima-ilum was elsewhere ended up in his own archive. If 2, 130 is from the same writer, we might locate him in Kisurra. (Veenhof 2005, [AbB 14], xxii).

The relation between the spellings *qù* and *qì*/*qè* cannot be further tested in the OB letters from the corpus due to their small number of instances. A significant association to southern spelling practices for the generic use of G-signs in /qu/, /qi/ and /qe/ is, however, challenged by certain instances found in northern-related OB documents, especially for the clusters /qi/ and /qe/.

3.5.3 /qa/

In contrast with the unusual representation of the segments /qi/, /qe/ and /qu/ by G-signs in OB letters, the syllabic cluster /qa/ appears overwhelmingly spelled with the sign GA (*qá*) in the OB record. There are, however, two alternative spellings, the sign KA (*qà*) and the sign QA (*qa*), that also occur with different intensity in the OB letters from ACCOB.

3.5.3.1 Early OB letters

Given the main use of G- and K-signs involved in the written form of /qa/, the analysis of the representation of /qa/ in early OB letters needs to consider, not only the occurrences of the three main spellings for /qa/ commented above, but also the orthography of its 'non-emphatic' counterparts /ka/ and /ga/. The representation of these clusters in early OB letters differs from later scribal practices. J. Westenholz (1983) provides a comparative chart with the signs used to render /qa/, /ka/ and /ga/ in early OB texts from Kisurra, old Nippur and Lagaš, the archive from Lu-igisa and early OB documents from ed-Der[318]. According to J. Westenholz, in the most archaic OB texts from Nippur and Lagaš (as in Old Akkadian texts), the orthography of /qa/, /ka/ and /ga/ is not graphically differentiated. All three readings are subsumed under one single grapheme: GA. For documents from Kisurra we find a similar graphic system with the innovative use of the sign KA to represent /ka/. The archive of Lu-igisa, on the other hand, adds a different feature: the sign KA does not only render /ka/, but it also occasionally represents /qa/. Finally, in ed-Der (Sippar), another innovation occurs with the usage of a specific sign, QA, rendering exclusively the cluster /qa/.

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[316] A letter from a woman. Instances: *qè-bé-ri-ia* (l. 27) and *qù-ut-ri-na-t*[i]*m* (l. 9). See N. Ziegler's comment on Archibab:'Lieu de rédaction: Nippur' (http://www.archibab.fr/4DCGI/listestextes3.htm?WebUniqueID=2238247 [accessed 01.05.2017]).

[317] *qì-bi-a-šu-nu-ši-im-ma* (AbB 14, 75:21); *li-il-qè-e-ma* (AbB 14, 74:12); *i-il-qè* (AbB 14, 75:16); *qè-er-ba-am* (AbB 14, 75:31) and *il-qù-ú* (AbB 14, 74:18).

[318] Westenholz 1983 (JNES 42), 224.

The representation of /qa/ in early OB texts according to J. Westenholz 1983 is summarized in Table 28, below:

Table 28: Graphic systems to render /qa/ in early OB texts, after J. Westenholz 1983.

	Kisurra	Nippur/Lagaš	Lu-igisa[319]	ed-Der (Sippar)
GA	*qá*	*qá*	*qá*	*qá*
KA			*qà*	*qà*
QA				*qa*

To the instances in the table we could add the sign GA (*qá*) occurring in the early OB letters from Ešnunna published by Whiting (1987), a few years after J. Westenholz's article.

The OB letters in ACCOB return a similar, but not completely identical distribution of signs for /qa/ to those observed by J. Westenholz (1981). On the one hand, the ACCOB corpus includes only five letters from the early archive of ed-Der, in which only *qá* (GA) is attested[320]. On the other hand, one early occurrence of QA representing /qa/ appears in the copy of a letter from the archive of Lu-igisa[321].

The scarcity of early OB data in the corpus implies that small differences in the number of attestations (like the occurrence of a single instance of *qa* in Lu-igisa's archive) can change dramatically the overall distribution of the signs. Nonetheless, Figure 18 belows presents the current instances of /qa/ found in diverse early OB archives from ACCOB, dating approximately to the XX and the XIX centuries BCE, prior to the reigns of Rim-Sin of Larsa and Sin-muballiṭ of Babylon[322].

[319] Westenholz, due to the different opinions expressed by Walters (1970) and Stol (1971), considered at the time of writing the article that the origine of the archive was not certain. In the present study, we follow Stol's suggestion (Stol 1971, 365) that it relates mainly with the city of Lagaš.

[320] *qá-ti-ma* (Sumer 23 [IM 49341]:28); *i-qá-li* (Sumer 23 [IM 49219]:51); *q*[á]-*t*[a-am] (?) (Sumer 23 [M 49222]:10); *qá-ti-ia* (Sumer 23 [IM 49225]:16).

[321] *ta-qa-bi* (AbB 8, 90:7). Only the copy (TIM II, n.90) was collated, not the original.

[322] The instances from Larsa, some of them of difficult reading, belong to two different periods: the reign of Sumu-El (*a-qá-ti:* TCVP III, 6:5) and Sin-iddinam ([q]*á-du*-[um] and *ʹúʾ-qá*-[a-šu-nu-ti]: AbB 12, 167:6 and 9).

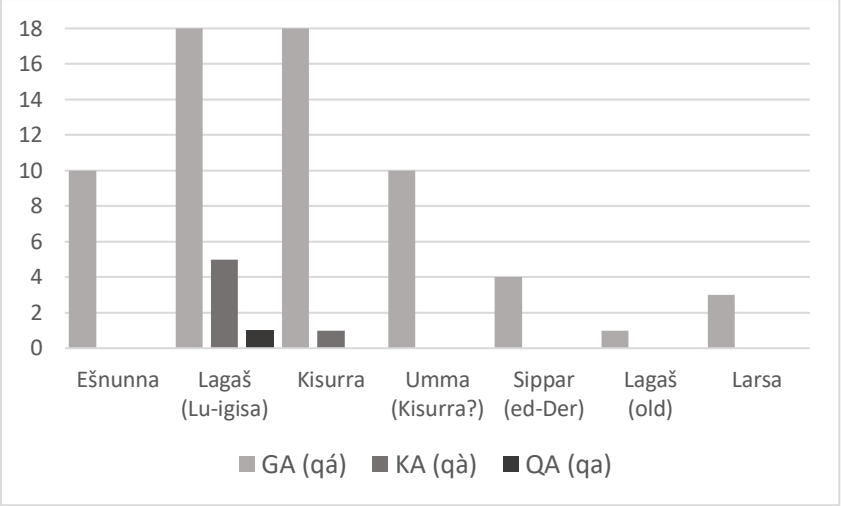

Figure 18: Instances of /qa/ in early OB letters in ACCOB[323].

The graphic in the figure shows that, despite the occurrence of spellings such as *qà* and *qa*, better attested in the letters from the archive of Lu-igisa[324], the most common way to denote graphically the syllabic segment /qa/ in the, admittedly few, attestations of early OB letters from the corpus, is with the sign GA (*qá*). The same sign is also the predominant way to render /qa/ in later OB texts[325], while KA and QA are also attested.

3.5.3.2 The sign KA (*qà*) in later texts

The spelling *qà* is very rarely attested in OB texts[326]; the five instances from the early OB archive of Lu-igisa commented above are the most salient cases in the whole collection of letters in ACCOB. However, *qà* is not exclusively an archaic orthographic trait only represented in early southern texts. A small number of instances of KA rendering forms expected to denote /qa/ emerge occasionally in OB letters from a time frame that includes the reign of Hammurabi and (probably) also the late OB period. From a geographical perspective, these occurences are not restricted to southern environments. As shown in Table 29, some of the cases of the spelling *qà* in ACCOB are related to northern locations such as Sippar, Babylon or Dilbat. The table lists the six occurrences of *qà* in ACCOB

[323] The sign QA for /qa/ occurs in text n.55 of Whiting's early OB letters from Tell Asmar (Ešnunna). However, this particular letter contrast chronologically with all the others published in Whiting 1987 and it is described as 'later Old Babylonian; time of Hammurapi or later' (Whiting 1987, x). For this reason, the form *qa* in AS 22, 55:6 is not considered in Figure 18.

[324] It should be noticed that the archive might include letters from diverse proveniences. Walters (1970) writes: 'The letters and documents may have originated at various points so that varying scribal traditions are represented' (Walters 1970, xxii). The attestations from the letters of the Lu-igisa archive are:
Sign GA: AbB 8, 90:15; AbB 8, 103:14 and 26; AbB 8, 104:18; AbB 9, 204:10; AbB 9, 206:10; AbB 9, 208:19; AbB 9, 214:10; AbB 9, 215:9; AbB 9, 216:7; AbB 9, 219:6; AbB 9, 232:5; AbB 9, 236:18; AbB 9, 252:18; AbB 9, 259:29 and 31; AbB 9, 266:16 and RA 30, p.98-100:6.
Sign QA: *ta-qa-bi* (AbB 8, 90:7; notice that the same letter also presents *q*[á]-*ar-na-am* in l. 15).
Sign KA: *ti*-KA-*bi-ú* (AbB 9, 253:9); *tu*-KA-*a-ma* (AbB 9, 254:5); *sà-as*-KA-*am* (AbB 9, 258:6) and *pa*-KA-[d]*i-ia* (AbB 9, 267:6).

[325] It is implied that 'OB texts' refers here to texts from the areas that are subject to the present study. The phenomenally well-attested texts from Mari and other peripheral regions show a clear preference for the sign QA for /qa/.

[326] See Stol 1971 (BiOr 28), 366, and Finkel 1976 (RA 70), 51. Some of the following attestations in ACCOB are already mentioned in these studies.

excluding six instances from the early OB archive of Lu-igisa and Kisurra considered in the previous section.

Table 29: Instances of qà *in OB letters from ACCOB, excluding the early archives.*

N.	Instance	Letter	Time	Related area
1	*qà-qà-ri-im*	AbB 14, 32:15	Si	Dilbat
2	*ih-li-qà-an-ni-ma*	AbB 13, 21:6	Ha	Babylon
3	*ta-na-z*[i-q]*à*	AbB 12, 107:8	Ha-Si?	Sippar
4	*qà-ti-a*	AbB 12, 27:9	?	Sippar? Babylon?
5	*ša-ar-qà-tum*	AbB 14, 54:26	ate OB?	Lower Yahrurum?
6	*qà-aq-qá-as-sà*	AbB 9, 129:7	Ha	Larsa

It is worth noting that instance number 2 is found in a royal letter from King Hammurabi, in what constitutes an unusual orthographic trait among the group of OB royal letters which are otherwise widely assumed to represent one of the most regular and standardized corpora of Old Babylonian texts.

From a chronological point of view, instance n. 5 is probably a late example of the spelling *qà*. This unusual 'broken' spelling, *ša-ar-qà-tum*, occurs in a text that mentions the term *ze'pum* 'short letter':

> *ki-ma zé-e'-pí ta-am-ma-ra* 'as soon as you see my note' (AbB 14, 54:22).

This type of letter was, according to Sallaberger (1999), developed in the late OB period, from the time of Ammi-ditana. This would imply that the spelling *qà* is also (albeit marginally) attested in texts dated 200 years later than the letters from the Lu-igisa archive. Further examples from AbB not included in ACCOB confirm the occurrence of KA for /qa/ in *ze'pum* tablets: e.g., *ša-qà-lam* (AbB 9, 169:9) and *ri-qà-ku* (AbB 13, 192:8).

The last example in Table 29, *qà-aq-qá-as-sà*, (from *qaqqadum* 'head') contains a combination of two different signs, KA and GA, to render a segment commonly represented by the same sign *qá* in OB texts. Although this is an isolated case in the letters from ACCOB, the same structure is found in another OB letter: *ka-aq-qà-ra-tim* (AbB 2, 90:22), a form of the lexeme *qaqqarum* 'ground, earth'. Both terms occur in other Akkadian texts bearing a different sign for the first and the second CV syllables, and appear correspondingly listed with the two forms in modern reference dictionaries of Akkadian. Von Soden and Röllig (1991) point out that:

> Nicht durch die Wahl des Lautwertes *qà* aus dem Wege räumen darf man die nicht seltenen Schreibungen der Wörter *qaqqadu* und *qaqqaru* mit *k* am Anfang. (Von Soden and Röllig 1991, xx, note 1).

The variation involved in these two instances[327] might, therefore, represent a phonetic variable and not a purely orthographic trait. In this regard, it has been suggested that these writings can reflect the result of dissimilation of the 'emphatic' consonant /q/ (see Kogan 2011, 60). This could imply that perhaps other occurrences of KA for /qà/ could also respond ultimately to phonetic motivations.

3.5.3.3 The sign QA (*qa*)

[327] And perhaps also in instance number 1 in Table 29.

The use of the sign QA is an orthographic feature characteristic of OB texts from Mari and other peripheral areas for the representation of the segment /qa/[328]. Within the areas that are the object of the present study, the Diyala region is also characterized by employing QA for the written representation of /qa/[329]. This distinctive spelling trait separates the Diyala region from the orthographic practices of other neighbouring northern Babylonian areas and from southern Mesopotamia[330].

The data from the OB letters in ACCOB corroborates the expected correlation between documents featuring the spelling *qa* (sign QA)[331] and the Diyala region. While the sign GA (*qá*) is the sign overwhelmingly preferred in OB texts of all types to render /qa/, the spelling *qa* (QA) is the regular form found in the correspondence related to the Diyala area[332]. However, there are some exceptions of texts related to the Diyala region that contain the form *qá*. Besides the early OB letters published in Whiting 1987, which display mainly the form *qá* (GA) (see section 3.5.3.1), a group of later documents also contain exclusively the form *qá*, so commonly used in northern and southern-related letters in ACCOB. A group of letters sent by Iluni, the king of Ešnunna defeated by Samsu-iluna, published by M. Guichard[333] in 2016, contain only one uncertain instance of the sign QA (*qa*)[334], whereas *qá* is used in seven occasions[335]. However, other characteristic spellings proper of the Diyala region such as the sign HI for /ṭa/ or the sign AB for /is/ and /es/ remain present in the letters by King Iluni. These data open further questions about the status and continuity of the characteristic use of QA for /qa/ in the region and in royal letters from Ešnunna after the reign of Ibal-pi-El II[336].

For the rare occurrence of the spelling *qa* in texts from the ACCOB corpus not related to the Diyala, with the only exception of the form *ta-qa-bi* (AbB 8, 90:7) from the early archive of Lu-igisa[337], all other instances of *qa* are associated with archives in northern areas[338]. At least in the case of *ìs-ni-qa-a*[m-m]*a* (AbB 5, 223:13), further orthographic traits such as the spelling *ìs* and the name of the sender, Ibni-Tišpak (with the theophoric reference to the tutelary deity of the city of Ešnunna), point to a relation between this letter and the Diyala region. Seven other cases[339] come from letters issued by Awil-ilim, a businessman whose activities covered locations as far as Aššur and Emar. The letters,

[328] See, i.a., Borger 2004 and Von Soden and Röllig 1991.
[329] See, i.a., Lieberman 1976, 103, note 284. For the origins of the formal similarity between OB texts from the Diyala region and Mari cf. Charpin 1988, 186 and Charpin 1985, 62.
[330] Except for some documents from Susa (see Von Soden and Röllig 1991, 7).
[331] The logographic occurrences of the sign QA functioning as a capacity measure (SÌLA) have not been included in the survey.
[332] See e.g. the use of the spelling *qa* (QA) and the absence of *qá* (GA) in the letter from King Ibal-pi-El II of Ešnunna (text Fs. Garelli p. 147-159) or the 50 letters from Tell Harmal published in Goetze 1958b.
[333] Guichard 2016 ('Guerre et diplomatie: Lettres d'Iluni roi d'Ešnunna d'une collection privée', *Semitica* 58, 17-59).
[334] The broken sign in *q*[a-at] (Guichard Semitica 58 1:17) cannot be safely reconstructed form the copy.
[335] *bi-it-qá-tum* and *bu-ut-tu-qá-ma* (Guichard Semitica 58, 1:10 (x2)); *bi-it-qá-tim* (Guichard Semitica 58, 1:11); *dam-qá-tim* (Guichard Semitica 58, 1:42); *i-qá-at-ti-ma* (Guichard Semitica 58, 3:12); *ta-qá-ab*-[bi…] (Guichard Semitica 58, 3:4') and *dam-qá-a-tim* (Guichard Semitica 58, 4:10).
[336] Three further instances of *qá* in Diyala-related texts apart from the letters sent by Iluni are attested in ACCOB: *da-am-qá-am* (OBTIV 21:20) and *qá-ti* (x2) (OBTIV 24:15 and 20).
[337] Notice the possible occurrence of *qá* in the form *q*[á]-*ar-na-am* in the same letter (l. 15).
[338] Especially in the few texts in the corpus related to the site of Harradum, geographically closer to Mari: *ú-da-am-ma-qa-ma-an* (Haradum 2, 73:7); *du-um-mu-qa* (Haradum 2, 73:8); *dam-qa-tim* (Haradum 2, 73:6') and possibly [pí]-*qa-at* (Haradum 2 76:1 and 3).
[339] *qa-tim* (AbB 12, 51:11); *qa-ti* (AbB 12, 53:6, 7, 10 and 12); *qa-ti-ka* (AbB 12, 53:16) and *qa-ti-i*[a] (AbB 12, 53:34).

however, were sent to Sin-eribam, who probably lived in Sippar[340]. Finally, other two occurrences featuring *qa*[341] occur in a text that belongs to the archive of Nanna-intuh, another travelling business man[342]. The sender of the letter, Ibbatum, states at the beginning of the text that he is in Jablija[343], a location in the upper region of Suhum, an area close to Harradum and Mari. This suggests that the spelling *qa* could be motivated by spelling practices in the geographical place of submission of the letter, rather than those from the archive where the document was (probably) ultimately stored.

3.6 The spelling of phonetic complements

3.6.1 Logograms and phonetic complements in OB letters

The term 'phonetic complement' is used in studies of logophonographic writing systems such as Akkadian, Hittite or Japanese to describe a series of graphic affixes of morphophonemic reference[344] that occur together with a logogram (i.e., a word sign) and render a segment of the phonetic form of the linguistic item graphically embodied by the logogram. In the Akkadian writing system, they usually consist of:

> the last consonant of the corresponding Akkadian word (i.e., the translation word) and of a vowel, sometimes of yet another consonant, i.e., by a CV or CVC sign; this sign normally represents the paradigmatic ending of the word required by the Akkadian construction. (Reiner 1966, 26).

The functionality of phonetic complements evolved and changed throughout the history of the Akkadian textual record. Contrary to what seems to have been a customary scribal practice in later periods, the function of phonetic complements in earlier periods (including OB) was not restricted to help identify the lexeme represented by a logogram; they were also used to reproduce the 'grammatical ending of the word' (Reiner 1966, 26). The form and number of phonetic complements commonly linked to logograms and the type of logograms that were most frequently accompanied by phonetic complements for different textual genres of periods of the Akkadian language have not been quantitatively analysed yet. Goetze (1945) included observations on the form of the phonetic complementation in his list of dialectal traits in OB mathematical texts:

> Northern texts prefer as complements syllables consisting of vowel + consonant (i.e. spelled syllables), southern texts, however, syllables consisting of consonant + vowel + consonant (i.e. spoken syllables) whenever such syllables are available. (Goetze 1945, 147).

The following explanatory examples given by the author refer to the Akkadian term *eqlum* 'field':

> North: *eqlum*^{um}, *eqlam*^{am}, *eqlim*^{im}
>
> South: *eqlum*^{lum}, *eqlam*^{lam}, *eqlim*^{lim}[345]

[340] Van Soldt 1990 (AbB 12), ix.
[341] *pí-qa-at* (AbB 12, 40:12) and i-*qa*-BI-*ku-um* (AbB 12, 40:17).
[342] Van Soldt 1990 (AbB 12), ix.
[343] *i-na Ia-ab-li-ia a-na-ku* (AbB 12, 40:6 and 7).
[344] Reiner 1966, 26.
[345] Goetze 1945, 147.

There is no further specification about this orthographic variable in Goetze's examination and classification of OB mathematical texts. However, the occurrences of the term *eqlum* and its complements are listed in Goetze 1945 along with other variables for every one of the groups tentatively identified by the author as bearing distinctive dialectal traits (see 3.2.2). Only three of the proposed groups appear to contain instances of the phonetic complement variable:

- The first group of documents, probably stemming from Larsa, includes *eqlam*^{lam} (three times) and *eqlim*^{lim}, but also *eqlam*^{am} and *eqlim*^{im} (two times).

- The second group, also considered southerner by Goetze, presents three instances of *eqlam*^{lam} and one *eqlim*^{lim}.

- Finally, the last group (number six), which is described as bearing 'northern modernizations of southern (Larsa) originals'[346], contains only two occurrences of the form *eqlim*^{im}.

The evidence for the dialectal distribution of the phonetic complement obtained from the mathematical texts analysed in Goetze's article is, therefore, indicative of a potentially distinctive orthographical phenomenon. However, the trait it is not sufficiently or unequivocally attested in the data presented in Goetze 1945 to make generalizations beyond the mathematical documents examined there. Moreover, all the phonetic complements in the article correspond to the noun *eqlum*, so the extent to which the same North-South distribution would affect the complements for other logograms is not explored. The framing of this phenomenon, however, might lead the reader to assume that the same geographical distinction applies to the graphic complementation of other logograms 'whenever such [CVC] syllables are available'[347]. Similarly, in the summary of the orthographic characteristics of the early OB texts in the southern archive of Lu-igisa, Walters notices:

> The word *eqlum* is written with a phonetic complement consisting of consonant-vowel-consonant, a characteristic of southern Old Babylonian. An exception is GÁN^{im}, 35:7'. (Walters 1970, xxii).

Nevertheless, it should be noted that the term to which both Goetze and Walters refer, *eqlum*, is in fact rendered by a different logogram in each study. While Goetze (1945) examines the complements for the logographic compound A.ŠÀ (*eqlum*), Walters (1970) refers to the logogram GÁN, which is used in early OB texts to render the noun *eqlum*[348].

The question arises as to whether the variability in the idiosyncratic type of phonetic complement (CVC or CV) that assumedly correlates with dialectal areas encompasses (1) all kind of logograms that bear phonetic complements, (2) only those logograms that represent the concept *eqlum* 'field', or (3) exclusively the logogram A.ŠÀ.

Bearing in mind the potential discrepancy that different types of texts can convey, including for the phonetic complementation variable, this section will analyse the distribution and type of phonetic complements, focusing on OB letters from ACCOB. However, to examine the scope of variation in phonetic complementation occurring in OB correspondence[349] and their potential relation to geographical variables, it is necessary to acknowledge:

---

[346] Goetze 1945, 151.
[347] Ibid.
[348] As well as in Old Akkadian and Old Assyrian. See Von Soden 1965 (AHw), 231.
[349] From the areas covered by the present study. Letters from Mari and other peripheral areas are, therefore, not included.

- The diversity that exists in the conventional transliteration of logograms and complements in OB letters.
- The diversity that exists in the frequency of logograms and their association with phonograms within the texts from the corpus of letters.

Logograms occur with very different relative frequency in ACCOB and their complementation by means of phonograms of any kind is also highly dependent of each individual word sign. Some logograms such as LÚ are never attested in the corpus accompanied by a phonetic complement, whereas other logograms such as A.ŠÀ appear with some type of phonetic complementation in around 50% of the cases in the corpus. According to the conventional transliteration of letters in the editions included in the ACCOB corpus, the most frequent logograms in the corpus that are accompanied at least once by any kind of phonetic complements are A.ŠÀ 'field' (more than 1000 instances in the corpus, with or without a phonetic complement), KÙ.BABBAR 'silver' (more than 600), ŠE 'barley, grain' (more than 600) and DUB 'tablet, document' (more than 500).

All of the forms mentioned above are cuneiform signs (or combinations of signs) that can indeed function as logograms. However, the signs ŠE and DUB can also function as phonograms representing phonetic clusters such as /še/ and /tup/ in the Akkadian writing system. This poses a problem for modern transliterations of Akkadian texts, particularly letters, since they are the type of genre where phonograms are more frequently used and where the written language is less formulaic and closer to the oral language[350]. In those cases where word-signs can also potentially function as syllabograms reflecting the stem of the lexical item that they represent (e.g. DUB = *tuppum* and DUB = /tup/); and when one or more phonetic complements occur annexed to them, completing the representation of the phonological ending of the form (e.g. DUB-*pi* = *tuppī*), it is not immediately obvious to interpret whether the sequence of signs reflect a logogram-plus-phonetic-complement construction: DUB-*pí*, or a purely syllabic rendering of the word: *tup-pí*.

A pivotal factor to assess the logographic or phonographic status of these writings could be the extent to which the phonological value of the sign is commonly employed in writings of the same period, area and textual genre. For example, a value /e/ or /kal/ of the signs É and GAL in graphic representation of items other than the lexeme *ēkallum* 'palace' in OB texts from central or southern Mesopotamia are unusual. This might lead to the interpretation the signs É and GAL in the sequence É GAL LIM as part of the logogram-plus-phonetic-complement structure É.GAL-*lim*, rather than a phonographic *é-kál-lim*. The conventions for these transliterations are, however, not unified, and similar forms can bear different transliterations depending on the editions of the texts. The 14 volumes of the collection of OB letters Altbabylonische Briefe in Umschrift und Übersetzung (AbB) are not consistent in the method of transliteration of the sign DUB for *tuppum* 'tablet' when it occurs followed by complementing phonograms such as *-pí*, *-pa-am*, etc. All the volumes edited by F. R. Kraus (AbB 1, 4, 7 and 10), M. Stol (AbB 9 and 11), and the last two volumes edited by W. van Soldt (AbB 13) and K. Veenhof (AbB 14) opt for a logographic transliteration for terms such as the examples given above (in letter-spaced lower case Roman letters: e.g., d u p-*pa-am*). By contrast, other OB editions of letters, including volumes of AbB edited by R. Frankena (AbB 2, 3 and 6), L. Cagni (AbB 8) and AbB 12 (van Soldt 1990), or the transliterations of OB letters from Mari available on the website

[350] Cf., i.a., Huehnergard 2011, 110.

Archibab [351] prefer the unmarked phonographic-denoting transliteration in no spaced lowercase (*ṭup-pa-am*).

A difference in transliterating conventions can also be observed with respect to different logograms. Although transliterations of the sign DUB for *tuppum* are inconsistent in the collection of letters AbB, with the convention in several volumes coinciding with those of the editions of letters from Mari, the combination of signs É and GAL denoting the noun *ēkallum* 'palace' have a different distribution of transliterating principles. In all the volumes of AbB the signs are consistently transliterated as a compound logogram, irrespective of whether both signs occur alone or accompanied by phonograms like *-lim* or *-lam* (i.e. É.GAL-*lim*). By contrast, the transliterations in editions of letters from Mari often make a logographic versus phonographic distinction of the signs É and GAL. In these editions, only when the signs É and GAL stand for a form whose phonology is not analogous to the sum of the syllabic segments /e:/ plus /kal/, is when É and GAL are treated and transliterated as pure logograms. Compare the following clauses from the edition of text A.4347 by J. M. Durand[352]:

1. *a-na* **É.GAL-*šu*** *i-ru-bu* (A.4347 [Fs. Garelli, pp. 22-23]:4)
2. *wa-ar-ka-at* ***é-kál-li*** *ki-la-al-le*-[en(?)] (A.4347 [Fs. Garelli, pp. 22-23]:8-9)

Examples 1 and 2 illustrate the rendering of the signs É and GAL for *ēkallum* in two lines of the same letter from the archive of Mari. In the first case, É.GAL is treated as a logogram because it does not represent the complete phonological reading of the expected form [e:kal:**i:**ʃu][353]. In number two, the signs É and GAL have a phonogram *li* attached to the right, which means that the whole graphic constructions could represent, according to the Akkadian graphotactic system, the expected phonological articulation of the form: [e:kal:i:]. The form in number two is, therefore, transliterated as a combination of phonograms. By contrast, in the collection of OB letters AbB both sequences would be transliterated as logograms, in the second case accompanied by a phonetic complement: É.GAL-*li*[354].

Moreover, when in many editions of the letters from Mari the signs É and GAL occur alone, i.e., with no further phonograms linked to them, but when they stand for the noun *ēkallum* in the form [e:kal] (i.e. the noun in construct state bound to another noun, like in example number four), they are still transliterated in lowercase and separated by hyphens as phonograms:

3. **É.GAL** *ša-lim* (ARM 26/1, 265:30)[355]
4. [i-n]*a* ***é-kál*** *be-lí-ia* (ARM 26/1, 265:37)

Examples three and four belong to the same letter ARM 26/1, 265. In line 30 the signs É and GAL stand for *ēkallum*, the inflected form of the noun in nominative singular. In this case, the final morpheme marking the nominative ending /um/ is not graphically represented in writing and, therefore, the combination of the signs É and GAL implies a logographic rendering or the item, articulated [e:kal:um]. In line 37, however, the form

[351] http://www.archibab.fr/ (Collège de France - Institut du Proche-Orient Ancien).
[352] Durand 1991, 22-23.
[353] All the phonetic representations in this study are only meant to be indicative of specific issues, in this case, the existence of a vowel [i] not indicated in the written form. Phonetic nuances of the original language should not be expected to be represented with fidelity.
[354] See e.g., É.GAL-*li* for [ekal:i:] in AbB 14, 42:7.
[355] The transliteration of the logograms in ARM 26 is not in uppercase and uses hyphen rather than dot for separating the signs: 'é-gal'. Syllabic readings are represented in italics: '*é-kál*'.

represented by the same two signs, É and GAL, correspond to the construct state of the noun [e:kal], a form that could be phonographically clustered in two syllable-signs that coincide with the assumed phonographical values of the signs É and GAL. Therefore, the signs É and GAL are, in this case, not transliterated as a compound logogram.

It should be noticed, however, that while the phonological values /e:/ and /kal/ of the signs É and GAL are used consistently for the representation of the term *ēkallum* (according to the conventional transliteration of the OB letters from Mari), they are not usually employed for the phonographic rendering of any other lexeme[356]. The same texts, in turn, are abundant in renderings of /e/ and /kal/ by means of the phonographical signs *e* and *ka-al*.

The two criteria for a conventional description of the function of forms such as É GAL LIM or DUB PÍ mentioned thus far, refer directly to the textual context in which they occur. The assessment of the frequency and the scope of representativeness of the phonological values of logograms (such as *kál* for /kal/) is more significant when it is carried out within relevant corpora, i.e. in documents from a similar period and textual genre. A frequent occurrence of the phonographic function of the sign in related texts confirms the existence of the phonographic use of the sign in the scribal repertoire of the same genre. A low frequency, or even the lack of cases for the same phonographic value in the representation of other lexemes in the corpus is, however, less informative. It cannot be completely discarded that certain signs, while functioning as phonograms, occur overwhelmingly in the rendering of just one particular lexeme in a given corpus (e.g. *kál* for the lexeme *ēkallum*). Well-established OB scribal conventions, low frequency of the same phonological cluster in other lexemes attested in a corpus, or other unknown nuances might have played a role in the distribution of a sign within the documents examined[357]. A second subject of analysis that can provide a fruitful point of comparison relates to the distinctive behaviour of different logograms and phonetic complements within the same corpora.

In order to assess the North-South geographical variable observed by Goetze (1945) in relation to the different phonetic complements from OB letters in ACCOB, some conventional guidelines for defining phonetic complement accompanying logograms (e.g., DUB-*pî*) as opposed to simple chains of syllabograms (*tup-pî*) must be established first. For that purpose, not only the frequency of syllabic values of sign-words will be considered, but also the typology of logograms attested in the corpus of letters.

Logograms in ACCOB occur in diverse frequencies and within various graphic constructions. The first type of variation observed refers to the rate to which different logograms appear complemented by one or more phonograms. As was pointed before, while some logograms such as LÚ ‘man’ are never accompanied by a phonetic complement in the corpus, other logograms such as A.ŠÀ appear with some type of phonetic complementation in almost half of the instances of the corpus. A classification of the logograms in ACCOB with respect to their relation with phonograms distinguishes three main divisions.

3.6.1.1 Units of measurement

[356] Cf. Bottéro 1954: ‘é, grahie réservée, et sans doute idéographique, pour *ēkallum* et (il)Éa’ (Bottéro and Finet 1954 [ARM 15], 49).

[357] The phonographic reading value *har* of the sign HAR, for example, occurs in AbB letters almost exclusively in the rendering of the same term: *ma-har* (from *mahrum* ‘front’), but it is not generally considered to be part of a logographic compound MA.HAR.

The first group consists of frequently attested logograms that typically do not co-occur with phonograms of any type to complement their notation: GÍN 'shekel', MA.NA 'mina' or BÙR 'bur' occur each one between ca. 200 and 300 times in the corpus. These signs share the distinct property of representing units of measurement, usually within quantitative numeral formulations. The convention is to transliterate these forms as word-signs (in uppercase), however, the phonological structure of the formulations is problematic. Huehnergard (2011) points to this respect:

> Measurements are almost invariably rendered logographically. Although many of the Akkadian terms for the units of measurement are known, and although the meaning of a given formulation is rarely in doubt, nevertheless the actual Akkadian pronunciation may usually not be determined with any certainty. (Huehnergard 2011, 579).

3.6.1.2 Logograms rarely associated with phonetic complements

The second group consists of a number of logograms, other than units of measurement, which occur mostly without phonetic complementation in the corpus. Figure 19, below, shows the most frequent word-signs of this group. It should be noted that the widely spread theophoric terms (e.g. UTU or AMAR.UD) and geographical terms (UD.KIB.NUN etc.) are not included in the survey[358].

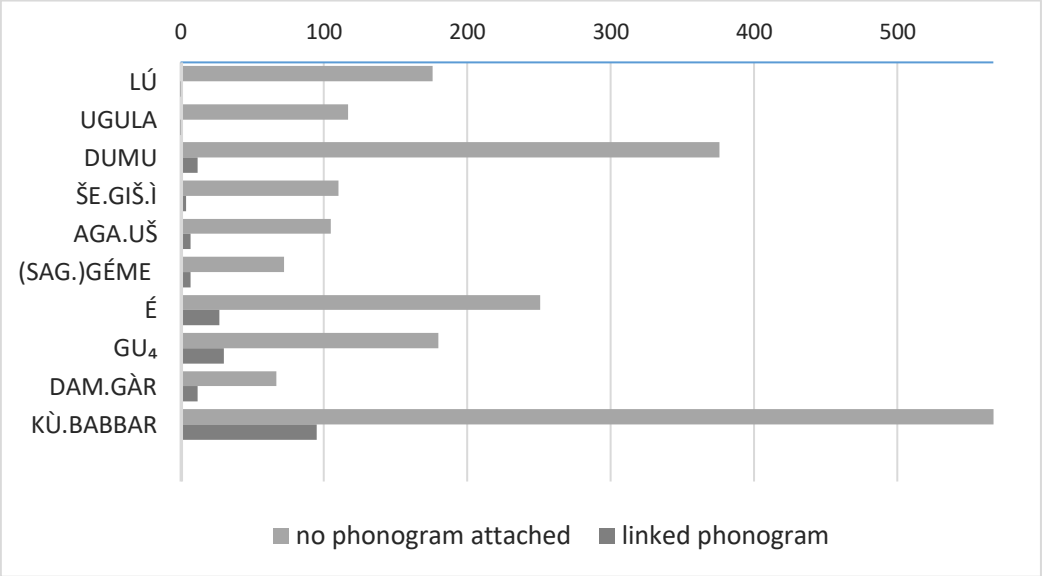

Figure 19: Instances of frequent (simple or compound) logograms that occur mostly without phonetic complements or other associated phonograms in the letters from ACCOB[359].

[358] Combinations of the logograms/compound logograms from Figure 20 (section 3.6.1.3) and instances of the logograms inserted in larger compounds to represent different lexemes (e.g., DUMU in DUMU.MUNUS or É in É.GAL) are not considered in the data shown in the graphic.

[359] Practically all the instances in Figure 19 occur in Akkadian writing contexts, but it should be noticed that in a few cases the logograms appear embedded in a Sumerian writing setting: e.g., the sign É in ŠÀ MU É (d)IŠKUR ŠÀ UD.UNU(ki) BA.DÙ 'In the year, that the temple of Adad was built in Larsa' (AbB 9, 94:6). The example is from the expression of a date on a letter. Dates and other formulae are a feature that, unlike in other contemporary administrative documents, occur very rarely in OB correspondence. Sumerian writing settings such as the written expression of dates in the example and the numeral formulations with measurement units, like those in the first group in the classification of logograms, might not be clearly indistinguishable.

The length of the bars in light grey represent instances of the logogram that do not include complements of a phonographic nature. Nonetheless, other graphic signs might supplement the meaning of the logograms, most often markers of plurality like HI.A or MEŠ[360]. These cases are included in the instances of 'no phonogram attached', unless they coexist with further phonograms, like in the group: GU_4(hi-a)-*ka*[361].

The instances coloured in dark grey are labelled 'linked phonogram' and describe a broader spectrum of cases than what the term 'phonetical complement' typically conveys. The cases in dark grey correspond to the occurrences of logograms followed either by paradigmatic phonetic complements, or else by phonograms rendering morphemes that can be argued to be more or less intrinsically associated to the item represented by the logogram: suffixes and clitics. Normalised transliterations display all these cases, therefore, hyphenated to the logogram in one combination of signs. The diverse nature of the phonograms comprised in this conventional classification incorporates:

1. Phonograms that reproduce the form of the lexeme's stem and/or its grammatically inflectioned ending, e.g. DAM.GÀR-*ri*-*im*[362].
2. Phonograms that reproduce the form of possessive suffixes, e.g. DAM.GÀR-*šu*[363].
3. Phonograms that reproduce the form of the enclitic marker *ma*: ŠE.GUR-*ma*[364].

The phonograms in case number one correspond to the signs traditionally designated by the term 'phonetic complement'. A general definition of the term is reproduced below:

> Phonetic complement: A phonetic sign added to a logogram which has more than one reading to indicate which is intended. (Coulmas 1999)[365].

According to this, the main function of the phonetic complements is to disambiguate the reading value of a logogram that could represent different lexemes. In Akkadian, however, the complementation system developed to typically reflect the ending of a word, helping not only identify the intended semantic value of the sign, i.e. the lexeme, but also the grammatical form of the lexeme encoded by its ending form:

> Afin de faciliter le choix entre les différentes valeurs idéographiques d'un signe, les Sumériens avaient coutume de préciser par un complément phonétique la consonne finale du mot (…) Les Akkadiens conservèrent l'usage des compléments phonétiques, bien qu'ils les employassent de façon moins systématique. Ils pouvaient ainsi non seulement specifier l'ideogramme, mais encore préciser la lecture de sa dernière syllabe. (Labat 1995, 22).

In the OB letters from ACCOB, the majority of the frequently attested logograms, alone or in combination with other logograms, are associated to the representation of one specific

[360] Less frequently, also sumerograms such as E.NE or TA.
[361] AbB 11, 160:9.
[362] FM 6, 11:11.
[363] AbB 9, 32:9.
[364] AbB 14, 34:9.
[365] The Blackwell Encyclopedia of Writing Systems. Coulmas, F. (ed). Blackwell Publishing, 1999. Blackwell Reference Online. http://www.blackwellreference.com/subscriber/tocnode.html?id=g9780631214816_chunk_g978063121481618_ss1-31 [accessed 01.05.2017].

lexeme[366]. In the ACCOB corpus, the function of disambiguating a phonetic complement attached to the combination of signs KÙ.BABBAR or to the sign LUGAL seems to be secondary; it is generally accepted that these logograms stand for the lexemes *kaspum* 'silver'[367] and *šarrum* 'king' throughout the whole corpus. Consequently, the definition of the term 'phonetic complement' in some descriptions of Akkadian sometimes tend to elapse the disambiguating function, focusing on the word-ending property:

> [Komplemente] die den Auslaut (bzw. Anlaut) des Wortes noch einmal syllabisch schreiben. (Von Soden 1995 [GAG^3, §5c], 8).
>
> The phonetic complements or phonetic indicators are a type of graphic affixes whose reference may be identified as morphophonemic. They occur with logograms in the following way: When a word sign (logogram), i.e., a Sumerian word, occurs in an Akkadian context, it is often followed by a sign whose value usually consists of the last consonant of the corresponding Akkadian word (i.e., the translation word) and of a vowel, sometimes of yet another consonant, i.e., by a CV or CVC sign; this sign normally represents the paradigmatic ending of the word required by the Akkadian construction. (Reiner 1966, 26).

This characteristic of phonetic complements in OB implies that the function of phonograms from the second and third group of the classification mentioned above is not significantly different from that of paradigmatic phonetic complements in the first group. The second group consists of phonograms that accompany a word-sign to render the phonological form of possessive pronominal suffixes, e.g. DAM.GÀR-*šu* (*tamkāršu*: merchant-3SG.POSS). These phonograms are not traditionally considered categorical examples of phonetic complements, but definitions of the term that focus on the property of reflecting a word-ending ('Auslaut' in Von Soden 1995) make the distinction blurrier since they draw on the thorny issue of determining the concept 'word'. A separate classification for both types of phonograms accompanying word-signs can be particularly difficult in cases where both types of phonograms appear conventionally transliterated, joined together to the logogram by hyphens (e.g., ÌR-*di*-*ia*), or when one single phonogram renders both a consonant of the stem and a pronominal suffix, such as in DAM.GÀR-*ri* 'meinen Kaufmann' (AbB 5, 150:4), where the syllable-sign *ri* reveals both a consonant from the stem *tamkārum* 'merchant, businessman', and the possessive pronominal suffix 1 sing. -*i*.

On the other hand, the function of disambiguating polyvalent reading values of word-signs, central to general definitions of phonetic complements, is not typically represented by the phonograms from the group of possessive suffixes. Furthermore, although phonograms representing these pronominal suffixes do associate morphologically and semantically to lexemes rendered by logograms, possessive suffixes, according to Huehnergard (2011), 'are nearly always indicated by syllabograms'[368]. This implies that their occurrence is explicitly marked graphically by phonograms and is not comprised by the same logogram that renders the stem to which they relate. This suggests that, while the graphic segmentation into word units in modern transliterations of OB letters equate pronominal suffixes with case endings into a similar unit in hyphenated communion with a sign-word:

[366] It should be noticed that other OB text genres are, in this respect, very different to letters. The disambiguating function of phonetic complements attached to word-signs in genres where logograms are widely employed differs from their use in letters, where the number and variety of logograms are typically much more limited.

[367] Furthermore, out of the 71 phonetic complements for the lexeme *kaspum* attested in ACCOB, only one renders a consonant from the stem: KÙ.BABBAR-*ap* (AbB 13, 57:18).

[368] Huehnergard 2011, 109.

e.g. (1) DAM.GÀR-*šu* (*tamkāršu*: merchant-3SG.POSS) and (2) DAM.GÀR-*um* (*tamkārum*: merchant.NOM.SG); the OB writing system presents a nuance between both constructions; the form in number (2) can be commonly rendered by the logogram alone: DAM.GÀR (*tamkārim*: merchant.NOM.SG), but crucially, the possessive suffix in the form in number (1) is not rendered by the logogram alone: DAM.GÀR (**tamkāršu*), and requires the explicit use of a subsequent phonogram.

When occurring with a linked phonogram, logograms in Figure 19 are mostly accompanied by syllable-signs denoting possessive suffixes[369]. Some of these word-signs or compound logograms: DUMU, AGA.UŠ or ŠE.GIŠ.Ì are indeed never accompanied by phonetic complements in ACCOB, but they do occur with syllable-signs marking possessive suffixes. The word-sign GU_4, on the other hand, while occurring more than 200 times in the corpus, it is only attested on two occasions with a phonetic complement. It should be noticed, however, that both instances belong to one early OB letter from the time of Bilalama[370], a fact that illustrates the relationship between the writing of logograms and temporal or spatial variables in OB letters.

The third type of phonograms listed above renders the enclitic marker *ma* (e.g., GUR-*ma*). Their consideration within the type of phonograms co-occurring with logograms of this study is purely based on the customary representation in scholarly transliterations of the enclitic copula and focus marker *ma* hyphenated to the previous item. Its relation to the items to which it is attached in the normalizations is debatable and depends on conventional issues such as the definition of the concept 'word' and the degree of integration (morpho-phonological, semantic, prosodic etc.) that different clitics might be assumed to convey[371]. This phonogram represents, therefore, the semantically and morphologically less-involved item with respect to the stems rendered by logograms. In the transliteration of the letters in ACCOB, it is also attested following word-signs for units of measure, such as in: *šum-ma* BÙR.4 IKU-*ma* (AbB 4, 24:20). The phonogram for enclitic *ma*, nevertheless, accounts for very few of the instances in Figure 19.

The distribution of the present three types of phonograms that associate with logograms in various ways will be relevant for the discussion of the status of the signs DUB (see section 3.6.1.3.1).

3.6.1.3 Logograms more frequently attested in association with phonetic complements

To assess the potential variation in the type of phonetic complement in relation to geographical coordinates suggested by Goetze (1945), it should be established first whether the phonetic complements of all logograms in the letters from ACCOB behave in the same way as was observed in the case of the word-sign A.ŠÀ in Goetze 1945, or conversely, the structure of the phonetic complements (VC versus CVC) varies according to the specific logogram that they enhance.

Recurrent logograms in transliterations of texts in ACCOB with a relatively frequent association with complementing phonograms are given in Figure 20[372]. The bars in the chart show the number of instances of logograms in three different contexts: cases where

[369] The only exception refers to KÙ.BABBAR 'silver', which is more frequenly attested with phonetic complements than possessive suffixes.
[370] AS 22, 30:34 and 36.
[371] See Haspelmath 2011 for the problematic account of these issues in cross-linguistic descriptions of languages.
[372] The form ŠE is not included in the chart.

the logogram is not associated with any type of phonogram to render a full lexeme; logograms followed by a sign marking a possessive suffix or the enclitic *ma*; and logograms co-occurring with a paradigmatic phonetic complement. Occurrences of logograms with other non-phonographic signs, such as ideographic plural markers (e.g. MEŠ), are also included in the first group unless further phonograms are added. When a possessive suffix or an enclitic marker are attested along with a phonetic complement accompanying a sign-word, the instance is computed within the dark-coloured subdivision of the bars corresponding to phonetic complements.

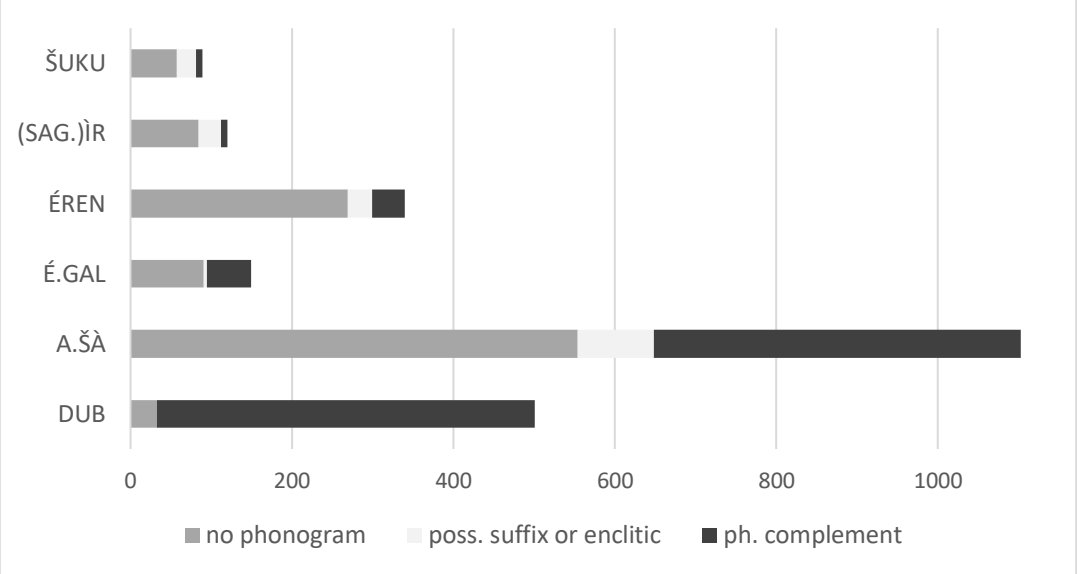

Figure 20: Instances of (simple or compound) logograms frequently accompanied by phonograms in the transliterations of letters included in ACCOB[373].

The data from Figure 20 shows that the largest group of phonetic complements in the corpus (in dark grey) occur in association with the word-signs DUB 'tablet' and A.ŠÀ 'field'[374]. The latter is the compound logogram whose phonetic complement is the subject of Goetze's observation about dialectal features in OB mathematical texts and will be discussed in 3.6.3. The logographic nature of the former in the instances represented as 'phonetic complement' in the graph is, by contrast, a convention not universally held in the texts' editions (cf. the different transliterating principles applied within the 14 volumes of OB letters in the collection AbB). The open-ended question about the logographic or phonographic rendering of the sign DUB for the term *tuppum* in combination with phonograms (e.g. in DUB-*pí-im*) can be appraised by contrasting these instances with the writing practices attested in ACCOB for other lexemes rendered by logograms.

[373] Combinations of the logograms with other logograms denoting different lexemes (e.g., É.DUB.BA) are not considered in the data shown by the graph. The greater number of instances managed to create the graph implies that the data has not been collated and might, in some cases, include forms from reconstructed transliterations of broken parts of manuscripts.

[374] It should be noticed that the table does not include sign ŠE in the representation of the Akkadian term for 'barley, grain'. The sign occurs very frequently both with and without phonograms in the corpus, but the phonological forms of the term (or terms) for 'barley, grain' and the type of the lexeme intended for in writings from different texts of the Akkadian record is still not satisfactorily clarified. See i.a. Cavigneaux 1989, Streck 1997, Livigstone 1997, Streck 1998 and Weeden 2009. In his concluding remarks, Weeden (2009) acknowledges that: 'The question of whether ŠE is always a logogram does appear to be less easily dealt with in view of the foregoing discussion than one might have thought' (Weeden 2009, 103).

3.6.1.3.1 DUB

The sign DUB can function, in diverse scribal settings, as a full word-sign to render the lexeme *tuppum*, as well as a sign representing the phonetic values /tup/, /tub/, /ṭup/ or /ṭub/[375]. If the frequently occurring forms of the term *tuppum* consisting of the sign DUB followed by one or more phonograms are to be interpreted as the graphic combination of a logogram, DUB (*tuppum*) plus phonetic complements, then these phonetic complements accompanying the word-sign DUB are the most numerous in the letters from ACCOB. However, the sign DUB in these renderings can also be explained as a CVC phonogram (*tup*) in an ordinary chain of syllabograms (e.g., *tup-pî*).

3.6.1.3.1.1 Low frequency of logogram without complements

The evaluation of the occurrence of the sign DUB compared to other logograms in ACCOB reveals significant differences. The most apparent divergence, as can be observed in the graph from Figure 20, is the unusual low ratio of instances in which the sign DUB occurs alone without any phonetic complement. In the corpus of letters, DUB occurs overwhelmingly more often accompanied by phonetic complements, in as many as 90% of the cases. A similar rendering of the term occurs in the OB letters from Mari[376] and even in the text of the Stele of the Code of Hammurabi in the Louvre, where all eight occurrences of *tuppum* include a phonographic rendering of the syllables /pi/ or /pa/[377]. This contrasts sharply with the rest of the most frequent logograms in the corpus, which occur with some kind of phonetic complementation in no more than 50% of the instances in the corpus.

Whereas the logographic function of the sign DUB rendering the noun *tuppum* is well attested in administrative texts, a contrasting ratio occurs in the writing of letters in OB. A search for unambiguous instances[378] of the sign DUB functioning as logogram for the noun *tuppum* 'tablet, document' in the texts from ACCOB returns a meagre amount of 33 tokens from a total of more than 500 occurrences of the sign rendering the same lexeme with the aid of additional phonograms. In these 33 instances, the sign DUB renders the form unaccompanied by further complements; the rest of the cases render the form *tuppum* by means of the sign DUB and other phonograms in constructions such as DUB-*pí-im*, DUB-*pí-ia*, DUB-*pa-šu* etc.

A closer examination of the 33 cases of the isolated word-sign DUB representing the noun *tuppum* reveals a significant pattern; with seven exceptions, the rest of the instances emerge in the writing of *tuppum* when it functions as the head noun in a genitive construction with another noun, i.e. when *tuppum* occurs in the construct state governing another noun.

Table 30: Logographic instances of sign DUB for tuppum *without phonetic complement in OB letters from ACCOB.*

N.	Context	Letter
1	*i-na* DUB MU.DA.SÁ *ša* AGA.UŠ(meš)	AbB 2, 36:13
2	*a-na* KA DUB *i-si-ih-t*[i]*m ša ma-ah-ri-ia*	AbB 4, 7:9
3	*a-na pí-i* DUB *ʾiʾ-si-ih-tim ša ú-ša-bi-la-ak-kum*	AbB 4, 8:15

[375] See, i.a., Borger 2004 or Von Soden and Röllig 1991. The phonographic value of the sign DUB, however, is not included in the sign lists published in Huehnergard 2011 or in Streck 2014.
[376] One exception is: *aš-šum* ***DUB*** *ša be-lí iš-pu-ra-aš-šum* (ARM 26/2 404:77).
[377] DUB-*pa-šu* (xii:15 and xiv:13), DUB-*pa-am* (ix r:33, xiv r:45 and 66) and DUB-*pí-im* (xii r:83, xiv r:68 and xv r:27) (According to the edition in Borger 2006).
[378] Reconstructed forms of the sign DUB in broken parts of the documents or instances of DUB followed by a gap in the manuscripts are not included in the data shown in Figure 20.

4	*ù* DUB A.ŠÀ(hi-a) *ša tu-ša-aṣ-bi-tu-šu-nu-ti*	AbB 4, 11:27
5	DUB MU.DA.SÁ-*e ù* IGI.DU$_8$ *ša il-ki-im*	AbB 4, 22:11
6	*iš-te-en* DUB *šu-ku-un-ne-e-em li-il-qí-a-am-ma*	AbB 4, 34:14
7	*a-na pí-i* DUB *i-si-ih-t*[im] *ša e-si-hu-šu-nu-ši-im*	AbB 4, 39:27
8	*a-na pí-i* DUB A.ŠÀ *ša i-na* UD.KIB.NUN(ki)	AbB 4, 41:10
9	*a-na pí-i* DUB A.ŠÀ-*im ša a-na* ŠU.HA(meš) *uk-ti-in-nu*	AbB 4, 41:20
10	DUB *i-si-ih-tim ša ma-ah-ri-ku-nu am-ra-a-ma*	AbB 4, 93:15
11	*a-na pí-i* DUB *i-si-ih-tim* A.ŠÀ-*am ù* ŠE-*am a-na*	AbB 4, 93:16
12	*ki-ma* DUB *i-si-ih-tim uš-ta-bi-la-ak-ku-nu-ši-im*	AbB 4, 100:9
13	*a-nu-um-ma* DUB ŠITIM(meš)	AbB 8, 50:5
14	*aš-šum me-he-er* DUB *i-si-ih-tim ša e-pí-iš-tim*	AbB 13, 17:4
15	*a-nu-um-ma* DUB *i-si-ih-tim šu-a-ti uš-ta-bi-la-ak-kum*	AbB 13, 17:12
16	DUB KA.BAR(meš) *ša i-na* DUB […]	AbB 14, 1:10
17	*i-na* DUB É.GAL *ki-a-am ša-ṭe$_4$-er*	AbB 14, 1:34
18	*i-na* DUB É.GAL *ša-aṭ-ru*	AbB 14, 1:36
19	DUB *I-bí-ì-lum a-na Šu-ì-lí*	AbB 11, 1: enveloppe 1
20	DUB *il-ka*-TUM *la iš-ša-ak-ka-an-ma*	AbB 7, 88:14
21	DUB *be-li-n*[i a-na] AGA.UŠ *li-il-li-ka-aš-šu-nu*	AbB 13, 6:35
22	DUB (giš)TIR(hi-a) *ú-ul na-ad-na-an-ni-a-ši-im-ma*	AbB 4, 111:18
23	[D]UB *ʾhu-buʾul-li ša* AGA.UŠ ŠU.PEŠ	AbB 14, 130:13
24	DUB DI.KU$_5$(meš) *Ì-si-in*(ki) *a-na* (m)*E-ga-tum*	AbB 14, 205:5
25	DUB LÚ […]	AS 22, 1:7
26	*i-na* DUB *ni-iš* DINGIR *ša tu-ša-ab-ba-lam*	Fs. Garelli pp. 147-159, iii:18
27	*ù* DUB *ta-aš-pu-ra-am*	AbB 3, 21:22
28	DUB *ša a-ša-ap-pa-ru-šu*	RA 102, 11:20
29	*i-na* DUB *la-bi-r*[i-i]*m a-na* ÉREN *ba-ah-ri-im ša-aṭ-ru*	UET 5, 62:16
30	DUB *ki-ma ka-ar-gu-ul-li ša i-ba-aš-šu-ú*	MHET 1/1 84:15
31	*i-na* DUB *ša aš*-PA-*ra-ma*	AbB 9, 19:39
32	DUB *li-il-li-kam-ma*	AbB 3, 64:8
33	*a-na* DUB *li-ra-ha-am*	AbB 3, 64:11

Table 30 lists all the instances of the term *tuppum* rendered by means of a single word-sign, DUB, and the contexts in which they occur. Numbers one to 26 (with the possible exception of number 25, in a broken context) occur in genitive noun phrases in which the noun *tuppum* occurs in the construct state.

Despite the enormous difference in frequency between the 33 occurrences of *tuppum* rendered by only one word-sign and the rest of the instances of the noun in the letters from ACCOB (cf. Figure 20), the genitive construction of the term with another noun appears rendered by the unaccompanied logogram DUB in more than one third of the cases in the corpus, with an alternative phonographic form (written DUB-*pí* in all the cases) attested merely in 47 occasions. Both graphic strategies to render the noun in the construct state before another noun can co-exist in the letters of one individual or even within the same text, as a letter sent by Ibni-Sin and the judges of Sippar shows:

- **DUB-*pí*** SANGA (d)UTU *ù* SANGA (d)*A-a il-li-ka-an-ni-a-ši-im*: ‘Ein Brief des Tempelverwalters des Šamaš und des Tempelverwalters der Aa ist an uns ausgegangen‘. (AbB 7, 88:13).

- **DUB** *il-ka-tum*[379] *la iš-ša-ak-ka-an-ma* : ‘Die Tafel der Lehen soll nicht etabliert werden‘**.** (AbB 7, 88:14‘).

However, the data from the corpus allows for the observation of a significant asymmetrical distribution of both writing strategies in at least one important part of the corpus: the letters sent by King Hammurabi. In the group of royal letters sent to Larsa by Hammurabi in the corpus, 19 instances are found of a genitive construction involving the term *tuppum* in construct state governing another noun. 18 of these instances employ the logogram DUB without further complements (examples 1 to 18 in Table 30) whereas only one single case displays the alternative writing:

- *a-nu-um-ma* **DUB-*pí*** *i-si-ih-ti* (giš)KIRI$_6$(hi-a*) ša a-na* ŠANDANA(m[e]š) *iz-zu-uz*-[z]*a*(?): ‘Nunmehr sende ich euch die Zuweisungsurkunde der Garten, welche an die Obergartner verteilt werden werden‘. (AbB 4, 26:5-7).

The representativeness of the attested instances for both spelling constructions is not ample enough to draw further conclusions about factors affecting the distribution of the variables but further research on other documents might help identifying time or spatial nuances.

3.6.1.3.1.2 The expression of plurality

A second feature that differentiates the writing of the term *tuppum* in OB letters with respect to other lexemes rendered logographically is the graphic representation of plurality in the noun. In the ACCOB corpus, all of the most frequently occurring logograms in the OB letters shown in previous figures are regularly attested bearing non-phonographic markers of plurality such as the sign MEŠ or the compound form HI.A: e.g. A.ŠÀ(hi-a) (AbB 2, 55:5), AGA.UŠ(meš) (AbB 9, 237:18), GU$_4$(hi-a) (AbB 8, 7:16). These plurality markers can also co-occur with phonograms denoting possessive pronouns or the enclitic copula *ma*: ÌR(meš)-*ka-ma* (FM 6, 10:5). Nevertheless, they do not co-occur in the letters of the corpus with the ‘pure’ phonetic complements that denote lexeme-endings[380].

An exception to the wide-spread use of the signs MEŠ or HI.A is found in the word-signs for units of measurements, where a marker of plurality such as the ones cited above would be unnecessary inasmuch as numerals accompany the signs in the majority of the cases, expressing and quantifying the plurality of the terms. Other logograms without markers of plurality are obviously those which render uncountable nouns such as KÙ.BABBAR ‘silver’. A completely different exception in the use of markers of plurality for logograms in ACCOB, however, affects the representation of the term *tuppum*, if the sign DUB is indeed taken as a word-sign and not as the phonogram *tup*. While plural forms of the noun can be often identified by the syllable-signs that follow the sign DUB: e.g., DUB-*pa-a-tim* (AbB 4, 22:4), there are not instances at all in ACCOB of the plural markers HI.A or MEŠ complementing the sign DUB, whereas only one example of DUB(hi-a) (AbB 2, 80:9) figures in the whole collection of letters AbB[381].

3.6.1.3.1.3 Possessive suffixes

[379] Form explained as ‘Kasus-fehler’ instead of *il-ka-tim* in Kraus 1977 (AbB 7), 66, note 88d.
[380] However, the morphemes represented by the phonetic complements usually indicate already the morphological number of an inflected noun.
[381] Two more possible instances in AbB: AbB 11, 191:8 and AbB 11, 191:16 occur in fragmentary parts of the texts.

One of the features for different logograms shown in the graph in Figure 20 is the interaction between word-signs and phonograms denoting possessive pronominal suffixes. Although the latter can also co-occur with phonetic complements, such as in É-*ti*-*šu*[382] (*bītīšu* house.GEN-3SG.POSS), it is extremely common for signs rendering possessive morphemes to attach directly to a logogram: É-*šu* (*bītīšu* house.GEN-3SG.POSS)[383]. In this respect, the logogram DUB for *tuppum* contrasts starkly with the most frequent logograms in the corpus by not occurring in any case followed directly by a phonogram that marks a possessive suffix. All of the instances of the lexeme accompanied by a possessive morpheme are graphically rendered in the letters of the corpus by the sign DUB[384] plus a phonogram reflecting a segment of the lexeme *tuppum* and, only then, the sign for the possessive morpheme: e.g. DUB-*pa*-*ka* (*tuppaka*: tablet.NOM-2SG.M.POSS).

Other OB letters not included in ACCOB return the same results, notably letters from Mari and from the collection AbB. The reading DUB-*ka* in two letters from AbB[385] has been suggested in the reconstruction of textual gaps, but cannot be confirmed. Apart from these, no other instance of the sign DUB followed by a sign denoting a possessive occur in this corpus[386].

3.6.1.3.1.4 Structure of the adjunct phonograms

A final argument that speaks against the assumption that the sign DUB functions as a conventional logogram in most renderings of the noun *tuppum* in the OB letters emerges from the type and number of phonograms that typically follow it. The most frequent types of logograms in the OB corpus of letters that occur with phonographical complementation allow for different types of phonetic complements, in a high percentage of the cases, to signal a shorter or longer segment of the phonetic form of the lexeme that they represent[387]. As observed for the term *eqlum* 'field' in Goetze 1945, the compound logogram A.ŠÀ can be followed by a phonetic complement of the type vowel-consonant (A.ŠÀ-*am*), as well as consonant-vowel-consonant (A.ŠÀ-*lim*). The same happens to É.GAL 'palace' (cf. É.GAL-*im*[388] and É.GAL-*lim*[389]). Moreover, the phonetic complementation of most logograms can either consist of one phonogram: DAM.GÀR-*im*[390], É.GAL-*lim*[391], É-*am*[392]; or more than one phonogram: DAM.GÀR-*ri*-*im*[393], É.GAL-*li*-*im*[394], É-*ta*-*am*[395].

By contrast, the occurrences of *tuppum* 'tablet' that involve the writing of the sign DUB followed by further phonograms are consistently rendered by an identical structural writing

[382] VS 22, 84:13.
[383] AbB 13, 21:28.
[384] Or, less frequently, the signs *tu*-*up*.
[385] [DUB(?)]-*ka* (AbB 5, 88:9) and [DUB-k]*a* (AbB 7, 94:4).
[386] The writing conventions in other types of OB texts, however, might differ from that of the letters. The logogram DUB is e.g., attested in a purchasing document accompanied by the sign *šu* for the possessive pronoun 2.m.sing.: *e*-*zi*-*ib* KA DUB-*šu* (Fs. Renger, 610 [BM 97141]:21).
[387] The phonetic complements of the compound logogram KÙ.BABBAR 'silver' are regularly only formed by one single VC syllable-sign. However, this logogram present a low percentage of occurrences in the corpus followed by phonetic complements (ca. 10%).
[388] AbB 4, 1:5.
[389] AbB 4, 139:10.
[390] AbB 9, 232:9.
[391] AbB 4, 139:10.
[392] AbB 7, 153:13.
[393] FM 6, 11:11.
[394] AbB 5, 26:4'.
[395] AbB 12, 40:14.

frame throughout the corpus, despite their great number of occurrences: the first sign to the right of DUB always renders a CV sign where the phoneme represented is the consonant /p/ from the stem of the noun: *pu*, *pa*, *pi* or *pí*. Depending on the form of the noun, other phonograms follow the first one, rendering the complete phonological ending of the item: e.g., DUB-*pí* (*tuppī*: tablet.GEN-1SG.POSS), DUB-*pu-um* (*tuppum*: tablet.NOM.SG), DUB-*pa-am* (*tuppam*: tablet.ACC.SG), etc. However, there are not attestations in ACCOB of the sign DUB followed by merely a VC phonogram reflecting the last phonological segment of the inflectioned form of the noun (*DUB-*i*, *DUB-*um*, *DUB-*am*), as it is extremely common for logograms in OB.

It should be also emphasised that the same writing structure for the noun *tuppum* when it is represented by the sign DUB plus complements, is regularly found in other OB documents, including OB administrative texts, the letters from Mari, and the text of the Code of Hammurabi. Thus, the rendering of *tuppum* differs fundamentally from other terms written either logographically or logophonographically throughout the stele of the Code of Hammurabi. Goetze (1945) points out:

> Phonetic complements are virtually absent from the Code. (Goetze 1945, 147).

Indeed, logograms such as KÙ.BABBAR or É.GAL are never attested on the stele of the Code followed by a phonetic complement, and the frequent form A.ŠÀ does it in just three of the more than 80 occurrences where it is attested[396]. The lexeme *tuppum*, however, occurs rendered in the CH by strings of signs in all of the occurrences: DUB-*pa-šu* (xii:15 and xiv:13), DUB-*pa-am* (ix r:33, xiv r:45 and 66) and DUB-*pí-im* (xii r:83, xiv r:68 and xv r:27).

In conclusion, it can be argued that the way to render the noun *tuppum* in OB writings employing the sign DUB followed by one of more complementing phonograms contrasts sharply with the structure of logograms attested in the letters from ACCOB and other OB documents. Only a very small fraction of the well-attested instances of the noun *tuppum* are fully rendered by the sign DUB alone, in what can be regarded as the only cases in which the sign functions undoubtedly as a conventional logogram denoting the lexeme *tuppum*. Notably, most of these cases emerge in the corpus when the noun occurs in a genitive construction with another noun, a scribal feature particularly recurrent in the letters from King Hammurabi. Other common features of logograms: the property of being modified by co-occurring non-phonographic markers of plurality (e.g. MEŠ or HI.A), or the extremely common co-occurrence directly next the logogram of signs denoting possessive morphemes or VC syllables marking morphological case, fail to be attested for the sign DUB. Instead, except for the fewer cases of logographic DUB unaccompanied by phonograms, *tuppum* is in all cases represented by the combination of the sign DUB plus a CV sign: either *pu*, *pí*, *pi* or *pu*, and if appropriate, by further signs specifying case or possessive morphemes. In all these cases, if the sign DUB is to be interpreted as a phonogram *tup*, the resulting combination of signs would represent the noun in a way that is consistent with the graphotactics of OB writings.

Despite the fact that the sign DUB is not attested functioning as a phonogram in ACCOB, with the exception of the representation of the noun *tuppum*[397], the salient functional and contextual differences between DUB and other logograms in OB suggest that the only conventional logographic forms of the sign DUB in the corpus are those few cases in which *tuppum* is rendered by the sign DUB alone (forms listed in Table 30). Moreover, the fact

[396] A.ŠÀ-um (xii:5), A.ŠÀ-am (xiii:6).
[397] The same applies for the collection of letters AbB, except for the form *ú-ṭup-lum* (AbB 14, 110:49).

that the sign DUB is very rarely used in phonographic renderings of terms other than *tuppum* could have implied an unambiguous association of the sign DUB and the lexeme *tuppum*, immediately identifiable by OB readers. In such case, the use of DUB as logogram (for *tuppum*) would not have required graphic disambiguation by means of phonetic complements. By contrast, the great majority of attestations of the sign DUB in the OB texts occur followed by associated phonograms. In accordance to these observations, the most frequent cases where the lexeme *tuppum* is rendered by the sign DUB and one or more phonograms, therefore, will not be considered as a logophonographic construction in the present study of variation of phonetic complements in OB letters.

3.6.2 Variation in the structure of phonetic complementation

One of the dialectal variables for OB texts observed by Goetze (1945) regards the form of phonetic complements:

> Northern texts prefer as complements syllables consisting of vowel + consonant (i.e. spelled syllables), southern texts, however, syllables consisting of consonant + vowel + consonant (i.e. spoken syllables) whenever such syllables are available. (Goetze 1945, 147).

The examples given by Goetze in his study of OB mathematical texts refer in all cases to instances of the graphic complementation for the compound logogram A.ŠÀ 'field'. Examples of other cases of logograms that can also bear CVC signs as phonetic complement (e.g. É.GAL) are not presented in Goetze's study.

As was indicated earlier, subsequent studies on OB texts such as Walters 1970 have incorporated a similarly diatopic North-South distinction for logograms that is not restricted to A.ŠÀ[398]. However, a broad examination of the variability of phonetic complements and their correlation with dialectal areas in logograms other than A.ŠÀ, remains to be carried out. In this section, the (compound) logograms most frequently occurring in ACCOB will be analysed in order to determine the types and form(s) of the phonetic complements associated with them in OB letters. The next section will focus on the complementation of the logogram A.ŠÀ 'field'.

In the corpus of letters, most logograms occur in purely logographic settings (i.e., without any phonogram related to them) or followed by signs reflecting the phonological form of possessive suffixes (e.g. É.GAL-*ku*-*nu*). Lexemes that are rendered logo-phonographically in the letters of the corpus, however, show variation in the type of phonetic complements that they convey: the logograms DAM.GÀR 'merchant, businessman' or É 'house, family, temple' occur in two structural settings: complemented by one VC sillabogram (DAM.GÀR-*im*[399], É-*am*[400]); or by one or more signs rendering not only the case ending but also the final consonant of the stems (DAM.GÀR-*ri*[401], É-*ta*-*am*[402]). The number of phonetic complements attested in ACCOB for these two terms, including both alternative orthographic features, does not exceed a total of merely ten instances, which thwarts any attempt to find variation patterns. The occurrences provided by the corpus, however, show that at least the second orthographic pattern spreads over documents associated to different

[398] See the comments about the complementation of the logogram GÁN in Walters 1970, xxii.
[399] AbB 9, 232:9.
[400] AbB 7, 153:13.
[401] AbB 13, 57:8.
[402] AbB 12, 40:14.

regions: DAM.GÀR-*ri* (Umma/Kisurra)[403], DAM.GÀR-*ri-im* (Babylon)[404], DAM.GÀR-*ra-am* (Nippur) [405], DAM.GÀR-*r*[i] (Kiš) [406], or É-*ta-am* (Sippar) [407] and É-*tim* (Nerebtum)[408].

Better attested are the phonetic complements for É.GAL, KÙ.BABBAR and ÉREN. The data for the last two items, however, suggest a homogeneous type of phonetic complementation. When phonetic complements accompany the compound logogram for 'silver', KÙ.BABBAR (which occurs in just 72 occasions, against more than 600 non-complemented occurrences of the logogram in the corpus), they regularly consist of the VC signs *um*, *am* and *im* representing the nominative, accusative and genitive case endings of the lexeme: *kaspum*, *kaspam* and *kaspim* (and occasionally followed by further enclitic markers, e.g. KÙ.BABBAR-*am-ma*[409]). Only two exceptions are found in the corpus: (1) KÙ.BABBAR-*a-am* (AbB 11, 3:9), where the sign *am* is preceded by the sign *a* rendering perhaps a prosodic feature[410], and (2) KÙ.BABBAR-*ap* (AbB 13, 57:18), where the VC sillabogram reflects the construct state of the noun (*kasap*)[411].

The logogram ÉREN[412] presents the same pattern of phonetic complementation; only the logophonographical combinations ÉREN-*um*, ÉREN-*im* and ÉREN-*am* are attested in ACCOB. The phonetic complements for this logogram in the corpus of letters occur in texts related to northern areas[413], hence, in principle a hypothetical North-South orthographic division in the type of phonetic complements based on Goetze 1945 cannot be categorically dismissed by the data. However, for the compound logogram KÙ.BABBAR the same phonetic complements are well attested in letters relating to both northern and southern areas[414].

The complementation of ÉREN and KÚ.BABBAR in ACCOB are further distinguished from DAM.GÀR or É in that no consonant of the noun's stem is reflected by phonograms attached to the logogram, even in settings where the noun is in construct state or followed

[403] AbB 13, 57:8.
[404] FM 6, 11:11.
[405] AbB 5, 167:7.
[406] AbB 5, 150:4.
[407] AbB 12, 40:14.
[408] AbB 8, 8:5.
[409] ABIM 20, 18.
[410] For a number of cases in OB texts, it is not clear whether the writing of vowel-signs in sequences like the one in the example renders vowel length. For observations on these so called 'abnormal plene writings' see Aro 1953.
[411] The instance comes from an early OB letter from the southern Umma-Kisurra area. It should be noticed that, in the corpus of letters, other examples of the noun in construct state are rendered by the uncomplemented compound logogram: e.g.: KÙ.BABBAR *ri-a-tim* 'Das Silber für die Viehweiden' (AbB 3, 59:14), also in southern early OB letters: *i-na* KÙ.BABBAR DAM.GÀR-*im* 'silver of a merchant' (AbB 9, 232:9).
[412] The logogram ÉREN might stand for two different lexemes: *ṣābum* 'people, troops' and *ummānum* 'army, troops'.
[413] Only one exception: ÉREN-*am* (AbB 1, 109:11) from a letter sent by an unknown individual and associated to the archive of Sin-iddinam, located in Larsa. However, the references to Babylon made by the sender in the letter ('Als [er] nach Babyilon [unt erwegs war], ist er bei mir erschienen') and the absence of orthographic features typically found in southern texts prevent us to relate the text unequivocally to a southern origin.
[414] See, e.g., the same type of VC phonetic complements of KÙ.BABBAR in southern-related texts: KÙ.BABBAR-*im* (AbB 2, 123:11: Umma/Kisurra); KÙ.BABBAR-*am* (UET 5 16:12: Ur), KÙ.BABBAR-*am* (ABIM 20:15: Larsa), KÙ.BABBAR-*am* (AbB 11, 160:25: Nippur); and in northern-related letters: KÙ.BABBAR-*im* (AbB 2, 16:4: Babylon); KÙ.BABBAR-*im* (AbB 12, 9:6': Sippar) or KÙ.BABBAR-[a]*m* (AbB 8, 5:9: Šaduppum).

by possessive suffixes[415]. Contrary to common writings of the term in Old Assyrian letters such as KÙ.BABBAR-*pì*[416] or KÙ.BABBAR-*áp-kà*[417], the instances from the OB letters from ACCOB display either the compound logogram for the noun in construct state standing alone or followed by a phonogram denoting a possessive pronoun suffix (which does not render the consonant /p/ from the stem): e.g., KÚ.BABBAR-*i*[418], KÙ.BABBAR-*ka*[419]. An extended survey of the compound logogram for 'silver' in the OB letters from Mari and from the letters from the collection AbB not included in ACCOB returns the same results[420].

The diatopic distribution of the same orthographic strategy to write phonetic complements for the noun *kaspum* is, however, not inconsistent with the dialectal variable suggested by Goetze (1945). The reason is that Goetze restricts the terms of variation to cases in which a CVC syllabogram exists in the scribal repertoire that can render the lexeme's ending phonemic structure:

> 'Southern texts, however, [prefer] syllables consisting of consonant + vowel + consonant (…) **whenever such syllables are available**. (Goetze 1945, 147). [Emphasis added]

In this regard, the possibility of a logophonographic rendering of the noun *kaspum* with a final CVC complement is not a plausible writing option due to the fact that signs rendering /pum/, /pim/ or /pam/ are not part of the OB scribal repertoire for the epistolary genre. The underlying phonology represented by the compound logogram É.GAL (*ēkallum*, 'palace'), however, fulfils this requisite and could, according to a general definition of the variable like the one presented by Goetze, display different phonetic complements in northern and southern OB documents.

3.6.2.1 É.GAL

The letters from ACCOB present indeed two alternative types of phonograms associated to the compound logogram É.GAL: VC phonograms (e.g. É.GAL-*am*) and CVC phonograms (e.g. É.GAL-*lam*). Therefore, this term should be, in principle, an adequate case study to determine whether the orthographical variation on phonetic complements observed by Goetze for the logogram A.ŠÀ (and implicitly assumed to recur in other similar cases), can be replicated in other logograms from ACCOB.

The instances with the first type of phonetic complement (e.g. É.GAL-*um*; -*im* or *am*) are presented in Table 31, below:

Table 31: Instances of phonetic complements of the type VC with the logogram É.GAL in ACCOB.

N.	Instance	Letter	Related location
1	É.GAL-*am*	AbB 4, 83:11	Babylon
2	É.GAL-*im*	AbB 4, 88:15	Babylon
3	É.GAL-*im*	AbB 4, 35:18	Babylon

[415] The only exception is KÙ.BABBAR-*ap* in AbB 13, 57:18.
[416] AKT 3, 71:35.
[417] E.g., AKT 3, 45:15.
[418] RA 102, 11:22.
[419] OBTIV 14:13'.
[420] The only exceptions found are KÙ.BABBAR-*ʾpíʾ-ka* (FM 2, 57:9), KÙ.BABBAR-*pi* (twice in the same letter: AbB 14, 15:16 and 20) and KÙ.BABBAR-*pí* (AbB 12, 109:12). Perhaps also [KÙ].BABBAR-*ap* (AbB 13, 103:12').

4	É.GAL-*im*	AbB 4, 1:5	Babylon
5	˹É˺.GAL-*im*	AbB 9, 193:12	Babylon
6	˹É.GAL-*im*˺	YOS 15, 21:21	Larsa
7	É.GAL-*im*	AbB 14, 209:17	South?
8	É.GAL-*im*	AbB 14, 209:29	South?
9	É.GAL-*im*	AbB 13, 37:27	From Babylon? To Larsa?

The first five instances, related to Babylon, occur in royal letters from King Hammurabi. If correctly read, instance number six is a counterexample to the proposed northern typicality of VC phonetic complements: it belongs to a royal letter sent by King Rim-Sin of Larsa. The last two examples from Table 31 occur in the same letter AbB 14, 209, a document that does not preserve the name of the sender. The orthographic and lexical traits included in the letter: the word *unnedukkum* 'letter' (line 1) and the sign DU for *ṭù* (*aš-ṭù-ra-ak-kum*, line 3), suggest that the letter could relate to a southern location.

If the few instances of the compound logogram É.GAL complemented by a VC syllabogram do not clearly associate with one particular region, the more numerous cases of the signs É GAL followed by a CVC phonogram are likewise not exclusively localized in southern-related letters in the corpus. Most of the 49 occurrences of the form É.GAL plus a phonogram *lum*, *lim* or *lam* occur indeed in southern-related letters, mostly represented by instances from the letters sent by Lu-Ninurta (14 tokens), whose relationship to the South of Mesopotamia has already been discussed for other orthographic features on this study. However, the same orthographic trait occurs as well in all the phonograms that complement É.GAL stemming from the Diyala region (16 instances). Finally, northern-related OB letters are also attested displaying the CVC phonetic complement.

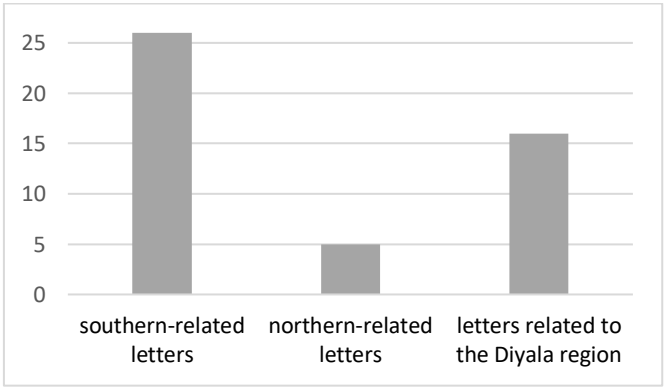

Figure 21: Instances of CVC phonetic complements of É.GAL in ACCOB by region.

The southern related occurrences for a CVC are well documented in letters from known figures such as Lu-Ninurta[421], Ud-balana-namhe[422], Šamaš-hazir[423] or his wife Zinu[424]. The few northern-related cases belong to: a broken form, É.[G]AL-*l*[im], in a letter sent by King Hammurabi[425]; a form in letter whose sender was probably located in Kiš[426]; one instance

[421] AbB 4, 52:11, AbB 4, 58:13, AbB 4, 61:20, AbB 4, 63:7 and 11; AbB 4, 64:19; AbB 4, 69:30; AbB 4, 115:10; AbB 4, 117:12; AbB 4, 122:14; AbB 4, 1316 and 14; AbB 11, 173:7 and AbB 11, 174:12.
[422] AbB 4, 138:19.
[423] AbB 14, 164:30.
[424] AbB 14, 166:29. Other letters included in the southern-related group are: AbB 3, 109:7 and 9; AbB 4, 72:14; AbB 4, 139:10; AbB 5, 159:5'; AbB 13, 58:22; AbB 14, 111:57; AbB 14, 124:8 and ABIM 26:31'.
[425] Therefore, not entirely reliable: AbB 2, 8:2'.
[426] AbB 10, 19:16.

related to Sippar[427] and one letter (with two instances) from Šamaš-naṣir[428], an official in the service of the central government 'apparently based in Pi-Kasi, a town situated in "Lower Yahrurum" the region south-east of Babylon'. (Veenhof 2006 [AbB 14], xx).

The instances of phonetic complementation of the noun *ēkallum* in letters from the Diyala region[429] in the graph present a peculiarity compared to the groups of northern and southern related letters. While the logogram É.GAL is more commonly attested without phonetic complementation throughout ACCOB (see section 3.6.1.3), the number of instances of the unaccompanied compound logogram in the texts from the Diyala region is limited to one isolated case[430], a significantly lower proportion that contrast with the 16 cases in the same region of the signs É.GAL followed by a CVC phonogram. This writing practice mirrors the way that the noun *ēkallum* is rendered in the letters from Mari[431], where purely logographic writings (É.GAL) are significantly less common than writings displaying further CVC phonograms. This circumstance has probably led later editions of the letters from Mari[432] to conventionally interpret these graphic constructions as chains of phonograms (*é-kál-lum*, rather than É.GAL-*lum*) when they meet the expected phonological form of the noun. The data relating to this variable in the Diyala region is quantitatively not ample enough to draw a distinctive orthographic characterization of the area, but the evidence of similarity in other orthographic features between the Diyala region and Mari (e.g. the use of the sign QA for /qa/ or HI for /ṭa/) suggest that further orthographic similarities between texts from both regions such as the rendering of the noun *ēkallum* might be plausible[433].

The diatopic type of variation in the rendering of the noun *ēkallum* in OB letters, therefore, does not only revolve around two single variables concerning the VC or CVC type of phonetic complements. A third element to be analysed concerns the relationship between these two variables with the frequency of the unaccompanied logogram É.GAL. Figure 22 provides a graphic showing these data distributed along three general geographical axes: North, South and the Diyala region.

[427] AbB 5, 259:9. For the relation of this letter to the site of Sippar cf. Kraus 1972: 'Alle Briefe aus den Sammlungen Adab, Kis und Sippar sind wirklich in diesen Orten ausgegraben worden'. Kraus 1972 (AbB 5), x.
[428] AbB 6, 118:19 and 21.
[429] OBTIV 3:10; OBTIV 4:4; Sumer 14, 1:11, 17 and 24; Sumer 14, 2:5, and 11; Sumer 14, 3:15 and 23; Sumer 14, 5:19; Sumer 14, 6:4; Sumer 14, 14:3, 7, 14, 16 and 20.
[430] OBTIV 24:9.
[431] The same occurs in Old Assyrian letters.
[432] See the latest volumes of ARM or the texts displayed in the website Archibab.
[433] For the origins of the formal similarity between OB texts from the Diyala region and Mari cf. Charpin 1988, 186 and Charpin 1985, 62.

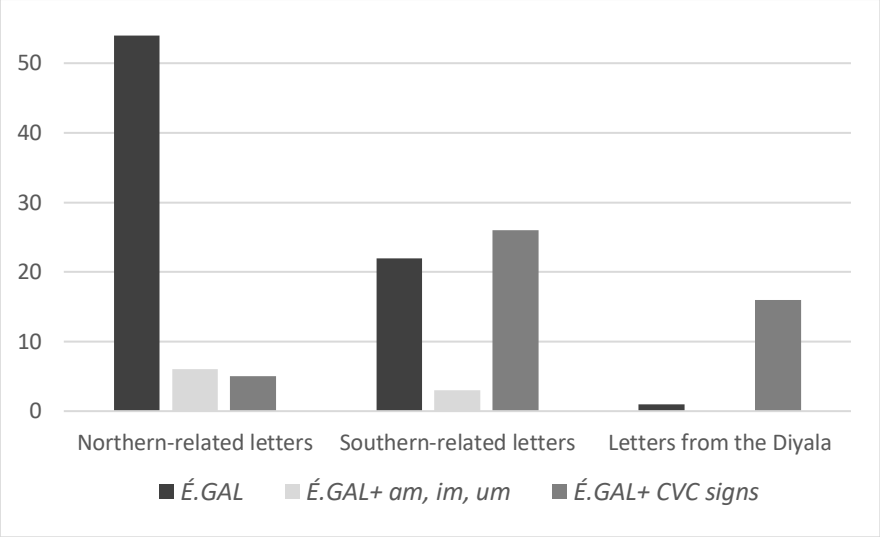

Figure 22: Instances of the noun ēkallum *'palace' in the letters from ACCOB*

The percentage of occurrences of the unaccompanied compound logogram É.GAL decreases in the record from northern-related letters to southern-related letters, being the lowest in the letters from the Diyala region.

The geographically distributed data from ACCOB suggests that the correlation between the two writings of the term *ēkallum* that are unambiguously logographic or logophonographic (i.e. É.GAL or É.GAL-*am/-im*), is significantly stronger than the occurrence of logographic writings (É.GAL) and writings of the type É.GAL-*lum*, (which can also, in principle, be accounted for purely phonographic renderings of the term: *é-kál-lim*). First, the northern area encompasses the greatest amount and proportion of purely logographic instances, as well as the most attested forms of the logophonographic type with ending VC signs. Second, the Diyala region contains the fewest logographic cases and the relatively most frequent instances of the type É.GAL-CVC.

The southern-related letters in the graph display a more balanced account of logographic and É.GAL-CVC forms. However, a closer examination of the logographic forms of the group reveals that an important part of them occur in letters that saliently display less typically southern orthographic features. Specifically, the eight occurrences of the uncomplemented logogram É.GAL in the letters from Lu-Ninurta[434] (classified into the southern-related group in Figure 22) occur precisely in five of his letters that stand out for their northern-like features. The letters AbB 4, 54; AbB 4, 111 and AbB 4, 118 have been already shown in Table 24 (section 3.4.2.1.4) to portray typically northern orthographic traits such as exclusive use of the sign BI for /pi/; some of the few signs TU for /ṭu/ (out of the greetings formula) in Lu-Ninurta's letters; the demonstrative form *šuāti* and VC phonetic complements for the logogram A.ŠÀ. In addition to these texts, AbB 4, 48 and YOS 15, 31 also contain the form A.ŠÀ-*am* and A.ŠÀ-*im* and yet another of the few instances of the sign TU for /ṭu/ outside formulae (see section 3.4.2). Moreover, another of the instances of the alone-standing logogram É.GAL in the southern letters of ACCOB occurs in YOS 15, 21:7, the same letter sent by King Rim-Sin that contains one of the three possible instances of VC phonetic complements (ʿÉ.GAL-*im*ʾ) outside the northern area.

Renderings of the term *ēkallum* in OB letters from ACCOB that can be interpreted as fully phonographic representations of the term (e.g., *é-kál-lim*) co-occur less frequently with

[434] AbB 4, 48:5; AbB 4, 54:4 and 6; AbB 4, 111:8 and 30; AbB 4, 118:8 and 9 and YOS 15, 31:17.

purely logographic (É.GAL) or logo-phonographic (É.GAL-*im*) renderings of the term. This is more evident in northern letters and in the letters from the Diyala region, but further archival subdivisions within the group of southern letters might explain the diversity of scribal practices, as exemplified in the analysis of the variable in the letters from Lu-Ninurta.

In sum, the phonetic complementation for (compound) logograms in the OB letters from ACCOB is diverse and differs according to the logogram/lexeme that the phonograms complement/render. The phonetic complements associated to ÉREN and KÙ.BABBAR are regularly of the same type: VC syllabograms reflecting only the case ending: *-um*, *-im*, *-am*. In other logograms such as É or DAM.GÀR, the methods of phonetic complementation are less uniform and part of the consonantal structure of the stem can be rendered by phonograms (e.g. DAM.GÀR-*ri*). In any case, none of the examples analysed can reliably test the diatopic orthographic differentiation claimed in Goetze 1945 on the type of phonetic complement:

(1) the geographically wide-spread regular rendering of the complements for KÙ.BABBAR or ÉREN could not be reversibly represented by a CVC syllabogram due to the lack of phonograms in the OB repertoire to denote clusters such as /pum/, /pim/, /pam/, /bum/, /bim/ or /bam/[435].

(2) The diverse ways of complementation for DAM.GÀR and É, although occasionally presenting CVC complements that could challenge Goetze's assumption[436], are not sufficiently attested in the corpus.

(3) The representations of the noun *ēkallum* shows both VC and CVC phonograms accompanying the signs É.GAL. While the data shows a higher proportion of the first type to occur in northern texts and of the second type in southern-related letters, other factors need to be accounted for[437]. First the even higher percentage of CVC phonograms in letters from the Diyala region. Second, the most significant areal distinction based on the usage or not of uncomplemented logograms. Third, the issue concerning the status of the combination of signs É and GAL as logograms or phonograms, when they are completed by subsequent phonograms that can fully reproduce the phonology of the noun *ēkallum*, remains unsettled. Some of the instances of the signs É GAL can be conventionally regarded as syllabograms rather than a compound logogram, which makes any attempt to analyse the type of phonetic complementation methodologically biased by the indeterminacy of the conventional transliteration of the forms.

3.6.3 Variation in the complementation of the compound logogram A.ŠÀ 'field'

3.6.3.1 GÁN

The lexeme *eqlum* 'field' is regularly rendered by the compound logogram A.ŠÀ throughout the OB record. There is, however, an alternative logogram, GÁN that denotes

[435] However, this is only if one assumes that the form underlying the logogram ÉREN, when it is phonetically complemented, is *ṣābum* and not *ummānum*.
[436] The writing É-*tim* occurs, not in a southern letter, but in a letter form the Diyala región: AbB 8, 8:5.
[437] Due to the great divergence in the amount of data for every region the different proportion cannot be considered statistically significant.

the same lexeme in early OB texts[438]. Walters (1970) points out about the archive of Luigisa:

> The word *eqlum* is written with a phonetic complement consisting of consonant-vowel-consonant, a characteristic of southern Old Babylonian. An exception is g á n^{im}, 35:7' (Walters 1970, xxii).

It is not entirely clear whether Walters' observation implies an interpretation of Goetze 1945[439], entailing that CVC syllabograms are a characteristic of southern OB phonetic complements in general, or whether it only applies to phonograms complementing any rendering of the term *eqlum*, or else only the logogram GÁN.

A North-South distinction in the type of phonetic complement accompanying the sign GÁN rendering the noun *eqlum* cannot be tested in ACCOB since all the letters containing the sign GÁN for *eqlum* with any kind of complementation are related to southern sites. Most of them belong to archives of early OB letters[440] , whereas 11 instances relating to the cities of Nippur, Girsu and Ur are not dated with complete certainty to an early OB period[441]. The logogram is regularly complemented by a CVC phonogram in almost all of the instances with the only exceptions of the form GÁN-*im* pointed out by Walters (1970) (AbB 9, 251:8')[442], and the CV-VC phonetic complement in GÁN-*li-im* (AbB 9, 263:12)[443].

It should be noted, however, that while in early OB letters from Ešnunna, the compound logogram A.ŠÀ is the only writing form attested for the noun *eqlum* (6 tokens)[444], early OB letters from southern archives comprise both signs: GÁN and the compound logogram A.ŠÀ[445]. While GÁN is regularly complemented by CVC syllabograms, A.ŠÀ is not attested complemented by phonograms in the early OB southern archives.

3.6.3.2 A.ŠÀ

The compound logogram A.ŠÀ represents the lexeme *eqlum* 'field', the most frequently occurring noun in the corpus of OB letters ACCOB, with more than 1000 tokens. The form accompanied by phonetic complements of the type VC and CVC (and also occasionally followed directly by ideographic plural markers and phonograms rendering possessive suffixes) is also well attested. It is possible, therefore, to analyse how the observations made by Goetze (1945) about 'dialectal' differences in OB mathematical texts apply on a large scale to the genre of letters.

3.6.3.2.1 A.ŠÀ-*um*/-*am*/-*im*

[438] See e.g.Von Soden 1972 (AHw vol II), 231.
[439] Cited by Walters in the previous paragraph (Walters 1970, xxii).
[440] AbB 9, 203:8; AbB 9, 207:4; AbB 9, 212:20; AbB 9, 214:4; AbB 9, 250:4; AbB 9, 251:4 and 7; AbB 9, 254:11; AbB 9, 255:18; AbB 9, 259:27; AbB 9, 261:18; AbB 9, 263:12; FAOS 2, 158:14; FAOS 2, 162:7; FAOS 2, 178:20.
[441] Girsu: AbB 14, 223:7 and AbB 14, 222:6. Ur: UET 5, 10:5, 17, 25 and 26. Nippur: AbB 11, 13:4, 11, 19, 23 and 26.
[442] A letter that also contains the alternative kind of complement in GÁN-*lam* (AbB 9, 251:4 and 7)
[443] Many Old Assyrian texts also present the logogram GÁN regularly complemented by a CVC syllabogram.
[444] AS 22, 32:4, 9, 13, 19 and 25; AS 22, 25:3.
[445] AbB 2, 127:6; AbB 5, 172:21 (the datation of this letter is unknown, and it is only tentatively included in the early OB group based on epigraphic traits; see Kraus 1972 [AbB 5], 84: 'Ältere, etwas flüchtige Schrift'.); AbB 9, 251:4; AbB 13, 58:15 and 16; FAOS 2, 151:13 and FAOS 2, 159:25.

The compound logogram complemented by the signs *um*, *am* and *im* is attested in 227 instances in ACCOB. The larger amount of them (185 tokens) occur in northern-related letters, including also two instances from the early OB letters from Ešnunna[446].

The occurrences of logophonographic forms of the type A.ŠÀ-*um*/*am*/*im* however, are not evenly distributed within the northern-related group of letters: around two thirds of the instances belong to the correspondence sent by King Hammurabi of Babylon to his administrators in Larsa. This reflects the unbalanced composition of the corpus, in which the letters from Hammurabi represent the largest group of letters sent by an individual in ACCOB. Moreover, the royal letters deal very frequently with issues related to fields, as do the letters sent by Hammurabi's central administrator, Lu-Ninurta.

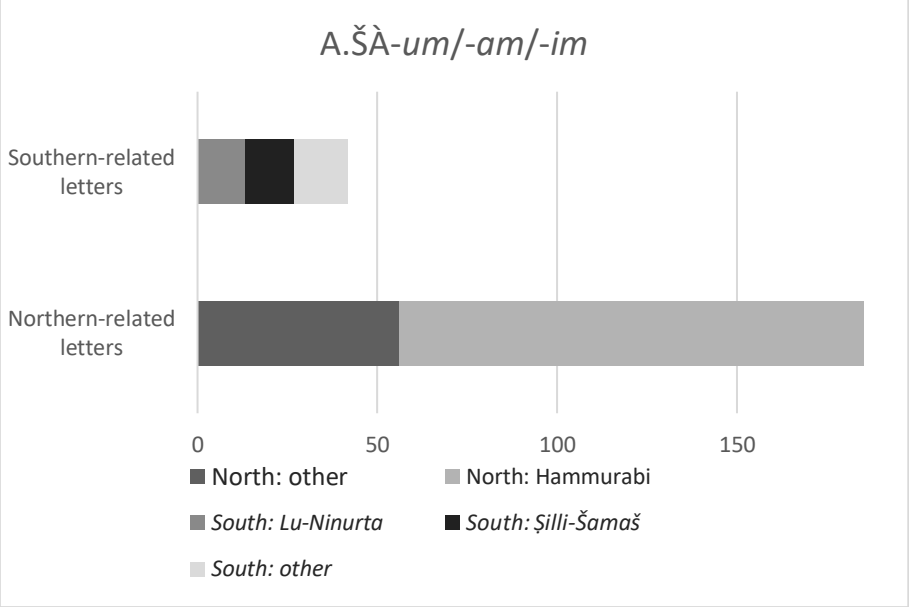

Figure 23: Instances of the compound logogram A.ŠÀ complemented by the phonograms um, am *or* im *in ACCOB.*

On the one hand, Figure 23 shows the larger volume of instances of the first type of phonetic complementation to the noun eqlum (A.ŠÀ-*um*/*am*/*im*) in northern-related letters; and on the other hand it illustrates how a great amount of these northern occurrences stem from the same (large) group of letters from King Hammurabi.

In the southern-related letters from the graph, two senders are particularly prominent: Ṣilli-Šamaš and Lu-Ninurta[447]. Ṣilli-Šamaš is a well-attested individual active in the southern kingdom of Larsa during the reign of Rim-Sin[448]. His letters, written in a typically southern epigraphic fashion termed 'Rim-Sin Schrift'[449] contain orthographic elements commonly found in southern OB texts (e.g., the spellings *pi* and *ṭù*). However, all 14 cases of phonetic

[446] The reading of one of them, A.ŠÀ-*am*(?) (AS 22, 25:3), is not completely clear. The other instance is A.ŠÀ-*um* (AS 22, 32:4).
[447] The rest of the southern-related letters included in Figure 23 are mainly associated to the sites of Adab (AbB 5, 33:8; AbB 5, 41:5, 8, 15; and AbB 11, 136:13) and, possibly Nippur (AbB 5, 176:7, 10 and 12; AbB 5, 179:3'; AbB 5, 205:4 and 9). The rest of the instances from southern-related corpora are: AbB 11, 183:24; AbB 14, 162:5 and UET 5, 53:4.
[448] See Veenhof 2005 (AbB 14), xviii-xx.
[449] See Kraus 1985 (AbB 10), xvi.

complements for the lexeme *eqlum* in the correspondence documents sent by Ṣilli-Šamaš invariably consist of the VC-phonogram type[450].

The other sender related to southern areas whose letters often contain the phonetic complement type shown in Figure 23 is Lu-Ninurta, the sender of the second largest group of letters by individual in ACCOB, after Hammurabi. It has been already observed that typically northern and southern orthographic features co-occur frequently in the collection of letters sent by Lu-Ninurta. Some of his letters, however, stand out for displaying distinctive northern orthographic patterns that diverge from the most widely attested southern traits that characterise Lu-Ninurta's documents. Indeed, some of the instances of A.ŠÀ complemented by a VC phonogram occur in the most northern-like of his letters: AbB 4, 50:14'; AbB 4, 54:10 and 15 or YOS 15, 31:7 and 12[451].

However, the two alternative writings for the phonetic complements of the logogram A.ŠÀ: VC and CVC, co-occur in two letters[452]. AbB 4, 125 includes: A.ŠÀ-*um* (l. 7), ˹A˺.ŠÀ-*im* (l. 5), A.ŠÀ-*am* (l. 10 and 25); but also A.ŠÀ-*lim* (l. 13) and A.ŠÀ-*lam* (l. 22). Similarly, AbB 4, 154 presents only one token of the first type: A.ŠÀ-*am* (l. 14) but four of the form A.ŠÀ-*lam* (l. 6, 11, 16 and 26). Combining both types of phonetic complementation for the compound logogram A.ŠÀ in one single text is a rare phenomenon in OB letters, despite the great amount of instances of the term and its complements attested in the record. Apart from the examples cited within Lu-Ninurta's letters (number one and two in Table 32, below), only six more letters in ACCOB and one more in the letters from AbB not included in ACCOB display the same orthographic admixture:

*Table 32: List of OB letters in ACCOB and in AbB displaying VC (*um, am, im*) and CVC types of phonetic complements for the logogram A.ŠÀ in the same text.*

N.	Letter	Type 1	Type 2
1	AbB 4, 125	A.ŠÀ-*um*, ˹A˺.ŠÀ-*im*, A.ŠÀ-*am*	A.ŠÀ-*lim*, A.ŠÀ-*lam*
2	AbB 4, 154	A.ŠÀ-*am*	A.ŠÀ-*lam* (x4)
3	AbB 4, 40	A.ŠÀ-*am* (x4), A.ŠÀ-*im* (x3)	A.ŠÀ-*lim*
4	AbB 10, 86	A.[Š]A-[i]*m*, A.ŠÀ-*im*	A.ŠÀ-*lam*
5	AbB 10, 108	A.ŠÀ-*im*	A.ŠÀ-*lim* (x2), A.ŠÀ-*lam*
6	RA 53, D4	A.ŠÀ-*im* A.ŠÀ-*am*	A.ŠÀ-*lam-ma*
7	AbB 5, 205	A.ŠÀ-*am* (x2)	A.ŠÀ-*lim*
8	AbB 14, 162	A.ŠÀ-im	A.ŠÀ-lam(!)(LUM)
9	AbB 3, 81	A.ŠÀ-*am* (x2)	A.ŠÀ-*lam*

Number three in Table 32 corresponds to a letter from King Hammurabi. This letter contains the only occurrence of a CVC phonetic complement for the sign A.ŠÀ in his correspondence, against more than a hundred cases of the alternative orthography A.ŠÀ-*um*/*am*/*im*. The same letter presents a contrasting combination of signs to render sibilants, which distinguishes it from all but one of the letters sent by Hammurabi[453].

[450] AbB 10, 177:22, 23 and 35; AbB 10, 193:16 and 20; AbB 14, 59:7, 8, 16, 18 and 22; AbB 14, 61:8; AbB 14, 62:18; AbB 14, 64:24 and 29.
[451] See Table 24 in section 3.4.2.1.4.
[452] The idiosyncratic heterogeneity of the two letters in question is also reflected by the fact that each one of them also comprises both instances of the sign BI and PI to render /pi/.
[453] If read correctly, the forms *ip-ru-**su**-ma* and *ip-ru-**sú**-ma* coexist in letter AbB 4, 40. The only similar example of an unexpected Z-sign in the more than 200 letters sent by Hammurabi included in the corpus, comes from AbB 5, 136 (*ú-sú-úh-šu-nu-ti* and *tu-še-ep-pé-es-sú-nu-ti*). See chapter four.

It should also be noted that texts number four and five in Table 32 are considered duplicate texts, although their orthographies are not identical; AbB 10, 108 includes one more CVC phonetic complement for A.ŠÀ than AbB 10, 86. Likewise, letter number seven in the table is also probably a duplicate text. These three cases of mixed types of complements for the noun *eqlum* occur, therefore, in texts that are possible OB scribal exercises. In any case, although the letters sent by Lu-Ninurta present an unusual mixture of both types of the phonetic complementation variable in some cases, they clearly contain a larger amount of instances of the second type of complementation, where the compound logogram A.ŠÀ 'field' is rendered by CVC-phonograms.

Within the rest of the southern-related letters in Figure 23, above,[454] it is worth noting that three instances of VC complements occur in two of the texts listed in Table 32: AbB 14, 162 and AbB 5, 205, in which the alternative CVC complement is also attested for the logogram A.ŠÀ. Alike the latter, another instance of the group belongs to a tablet that is considered a school exercise[455].

3.6.3.2.2 A.ŠÀ-*lum*/-*lam*/-*lim*

The second type of phonetic complementation for the logogram A.ŠÀ 'field' occurs mainly in southern-related letters, as expected from the observations in Goetze 1945[456].

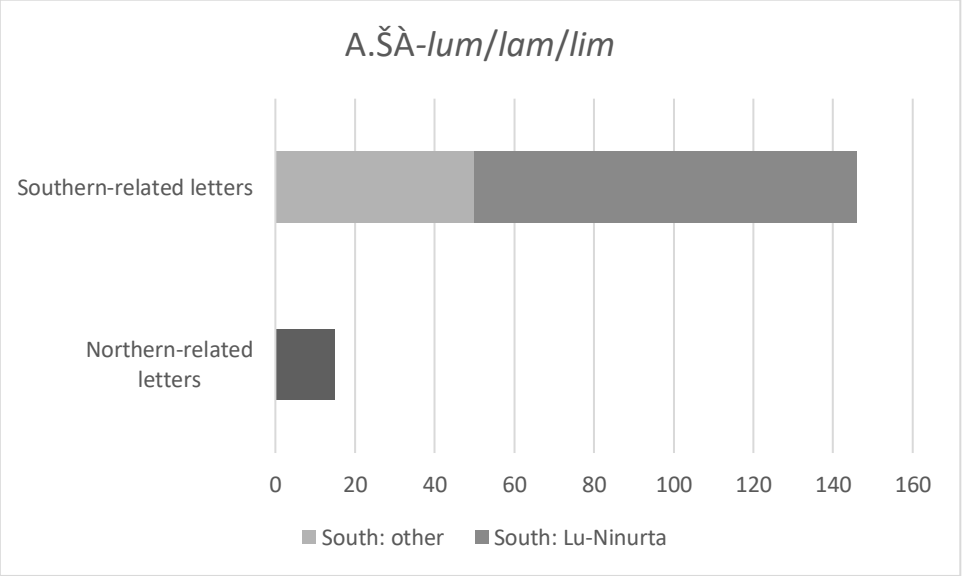

Figure 24: Instances of the compound logogram A.ŠÀ complemented by the phonograms lum, lam *or* lim *in ACCOB.*

[454] AbB 5, 33:8; AbB 5, 41:5, 8 and 15; AbB 5, 176:7, 10 and 12; AbB 5, 179:3'; AbB 5, 205:4 and 9; AbB 9, 198:7; AbB 11, 136:13; AbB 11, 183:24; AbB 14, 162:5 and UET 5, 53:4.
[455] UET 5, 53. See Archibab: http://www.archibab.fr/4DCGI/listestextes3.htm?WebUniqueID=1735111 [accessed 01.06.2017].
[456] The chart includes letters AbB 4, 137 and AbB 4, 70 (both belonging to the archive of Sin-iddinam), into the group of southern-related letters. It should be noted, however, that in both cases their files in Archibab propose 'Lieu de redaction: Babilim'. (http://www.archibab.fr/4DCGI/listestextes3.htm?WebUniqueID=2109495 and http://www.archibab.fr/4DCGI/listestextes3.htm?WebUniqueID=2109495 [accessed 01.06.2017]). While no further explanation for this remark are available on the website, other orthographic features coincide with traits typically found in southern letters, and it could be argued that the authors of the letters were related indeed to Larsa even if they sent letters from elsewhere (see also comments on the letters from Aha-nuta in 3.4.2.1). Therefore, both letters remain tentatively classified in the southern group for the purpose of this study.

The majority of the instances of this type of complementation strategy for *eqlum* in OB letters in ACCOB occur in letters from Lu-Ninurta[457], but geographical variables affects significantly the distribution of instances of this orthographic feature, even if one disregards the occurrences from the letters sent by Lu-Ninurta[458].

Within the 15 instances shown in the graph associated to the northern locations[459] a few observations are relevant in accounting for their distribution. (1) As already mentioned, one of the instances occur in a letter sent by King Hammurabi. (2) The peculiar admixture of orthographic traits in the letters from Šamaš-naṣir (AbB 14, 69:7), the sender of a letter containing another instance of A.ŠÀ-*lum* has also been commented upon in section 3.3.1.2 (*ṭà*) and 3.6.2.1 (É.GAL). (3) Ten out of the 15 northern-related cases of CVC complementation occur in letters thought to stem from the city of Kiš[460]: four of these correspond to the two duplicate letters, AbB 10, 86 and AbB 10, 108, listed in Table 32. Moreover, two more tokens are included in another letter from the same origin (AbB 10, 90), also assumed to be a scribal exercise.

The orthographic choice to denote the noun *eqlum* in OB letters either by writing the compound logogram A.ŠÀ followed by a VC or a CVC phonogram correlates positively with the northern or southern association of the letters in ACCOB even though most of the evidence for both orthographic alternatives come from two specific groups of letters, those sent by Hammurabi and Lu-Ninurta. However, the North-South division predicted by Goetze (1945) based on observations of OB mathematical texts is not consistently verified in OB letters. Thus, the only orthographic variant attested in one subgroup of southern OB letters, those sent by Ṣilli-Šhamaš, correspond in this respect to the option mostly preferred in northern-related texts (A.ŠÀ-*um*/-*am*/-*im*).

Other exceptions to the main distributional trend are characterized by a mixed performance in the orthography of the variable, a phenomenon notably associated to the orthographically heterogeneous corpus of letters from Lu-Ninurta on one hand, and to texts reported as scribal exercise tablets on the other.

3.7 The spelling of prepositional phrases: *aššumī* + pronominal suffix

[457] AbB 4, 44:7; AbB 4, 45:5; AbB 4, 47:5; AbB 4, 49:8; AbB 4, 51:9, 13 and 28; AbB 4, 52:5, 15 and 9'; AbB 4, 53:14 and 22; AbB 4, 55:14 and 21; AbB 4, 56:5, 11, 12, 14 and 17; AbB 4, 57:8; AbB 4, 58:8 and 9; AbB 4, 60:7, 8, 10 and 17; AbB 4, 62:5, 8 and 11; AbB 4, 63:9; AbB 4, 65:5 and 7; AbB 4, 66:5 and 15; AbB 4, 68:5, 13, 29, 36 and 39; AbB 4, 69:7, 20, 32, 35 and 44; AbB 4, 78:5 and 10; AbB 4, 112:8; AbB 4, 115:11 and 18; AbB 4, 119:5, 10, 12 (x2); AbB 4, 121:5; AbB 4, 122:5 and 11; AbB 4, 123:6; AbB 4, 124:5, 7, 8 and 11; AbB 4, 125:13 and 22; AbB 4, 126:5; AbB 4, 128:5; AbB 4, 130:6 and 25; AbB 4, 131:8, 19 and 24; AbB 4, 154:6, 11, 16 and 26; AbB 8, 73:10 and 3'; AbB 9, 199:7 and 11; AbB 9, 200:7 and 13; AbB 11, 173:9; AbB 11, 174:5; AbB 11, 189:5, 21 and 24; AbB 14, 161:5 and 10; YOS 15, 32:9; YOS 15, 33:18; YOS 15, 34:7 and 11; YOS 15, 35:5 and 6; YOS 15, 36:5, 6 and 10.

[458] The other 'southern-related' instances of the form apart from the occurrences in Lu-Ninurta's letters are: AbB 3, 71:4, 10 and 12; AbB 3, 74:16, 24 and 28; AbB 3, 88:11; AbB 4, 70:11; AbB 4, 73:5 and 7; AbB 4, 137:9 (from Aha-Nuta, originally classified as northern, see footnote 456); AbB 4, 138:7, 11, 13 and 17; AbB 4, 156:14; AbB 5, 5:5; AbB 5, 205:13; AbB 9, 40:20; AbB 9, 48:12 and 15; AbB 9, 114:6; AbB 10, 57:6 and 25; AbB 10, 184:8; AbB 10, 186:7; AbB 11, 11:20; AbB 11, 18:4'; AbB 11, 135:8 and 23; AbB 11, 175:4 and 6; AbB 11, 182:10; AbB 13, 2:4; AbB 14, 115:31; AbB 14, 162:16; AbB 14, 163:26; NABU 2009/52:15; RA, 102 1:6 and 9; RA 102, 17:18; UET 5, 30:6, 10, 21 and 25; UET 5, 35:4; UET 5, 45:16; UET 5, 67:7 and 11; UET 5, 77:9.

[459] AbB 3, 4:8 and 10; AbB 4, 40:23; AbB 10, 77:14; AbB 10, 87:6; AbB 10, 86:4; AbB 10, 90:2 and 5; AbB 10, 108:3, 6, and 7; AbB 10, 109:4; AbB 10, 171:7; AbB 14, 69:7 and AbB 14, 190:17.

[460] Or 'Ingharra'. See Kraus 1985 (AbB 10), xv.

The preposition *aššum* 'because of, for the sake of, concerning' occurs frequently complemented by a possessive pronominal suffix in a construction similar to the English phrases 'for my/your/his/her/its/our/their sake'. This construction is particularly well attested in OB letters due to the recurrent use of the greeting formula:

> [GN] *aššumīya* (*ana dariātim*/*dāriš ūmī*/…) *liballiṭūka*. 'May the god(s) [GN] *for my sake* grant you (forever) good health'[461].

However, the orthography of the prepositional phrase *aššumī-ya* (PREP-1SG.POSS), as well as the equivalent construction with other pronominal suffixes presents variation in the corpus of OB letters.

In their comments to the Iltani archive of Tell al Rimah, Dalley, Walker and Hawkins (1976) pointed out that:

> *aš-šum-ia* rather than *aš-šu-mi-ia* occurs in the Iltani archive letters 121:3 and 122:5, and is exactly paralleled in Larsa letters. (Dalley, Walker and Hawkins 1976, 37).

The OB letters from ACCOB include ca. 400 instances of the prepositional phrase[462] divided in three main writing structures:

- Forms that do not render the consonantal length of the phoneme [ʃ:] e.g., *a-šu-mi-ia*.
- Forms in which the prepositional element is rendered by the combination of an initial VC sign followed by a CVC sign: e.g., *aš-**šum**-ia*.
- Forms in which the prepositional element is rendered by the combination of an initial VC sign followed by a CV sign: e.g., *aš-**šu-mi**-ia*.

This orthographic variation contrasts with the way in which the form *aššum* (as preposition or conjunction) without suffixes is almost invariably written throughout the corpus of OB letters by means of the combination of the signs *aš* and *šum*[463]. The only exceptions to this type of writing of *aššum*[464] are: *a-šu-um* in three early OB letters[465] and, *aš-šu-um*, which occurs only once in ACCOB (in UET 5, 68:25[466]) and on two more occasions in other AbB letters[467].

The first type of writing for the prepositional phrase *aššum*-pronominal suffix (*a-šu-mi*-POSS) is hardly attested in the letters from ACCOB[468]. The instances of the other two structures are shown in Figure 25, below, distributed according to the association of the letters in which they occur with a broad regional division.

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[461] See Sallaberger 1999, 24 ff.
[462] Forms of the construction in broken contexts that have been completely inferred only by the context in the transliterations of the letters have not being accounted for. Other broken settigns in which there remain significant segments of the graphic rendering of the phrase, by contrast, are considered.
[463] Or *aš-šu* in cases where the mimation is not rendered.
[464] It should be noticed that the same preposition is attested with the form *aššumi* in early OB letters (see Whiting 1987 and AbB 11, 1), and also in AbB 1, 12.
[465] AbB 9, 232:6; AbB 9, 234:6 and Sumer 23, pp. 14-15 [IM 49225]:21.
[466] Probably a school letter. See the file in Archibab: http://www.archibab.fr/4DCGI/listestextes3.htm?WebUniqueID=1464382 [accessed 01.06.2017].
[467] AbB 2, 170:10 and 17.
[468] AbB 3, 60:12 and 14; AbB 5, 91:4.

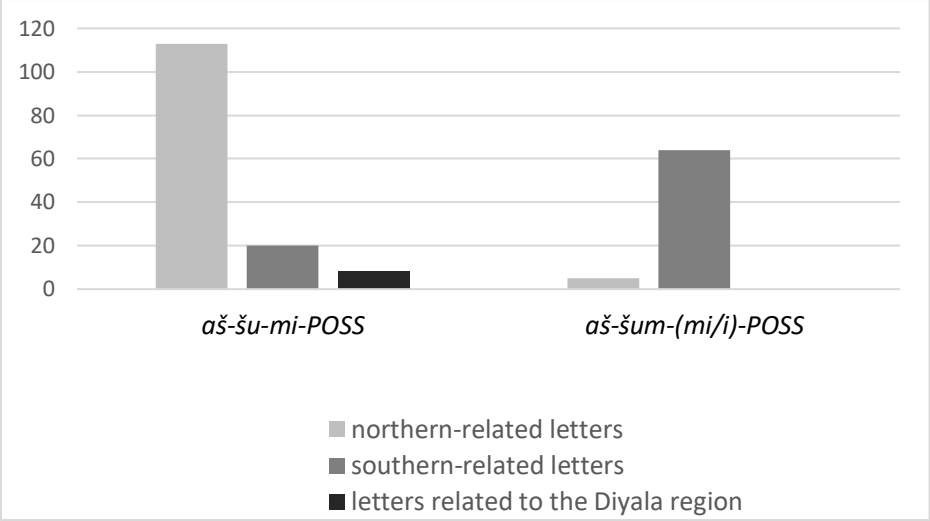

Figure 25: Instances of the two most frequently attested writing structures for the prepositional construction aššum- *possessive pronominal suffix in ACCOB.*

The data in the graph argues for a positive correlation between the writing of the prepositional construction *aššumī*-POSS and the general spatial division into which the OB letters from the corpus have been tentatively classified.

3.7.1 *aš-šu-mi*-POSS

Around 85% of the instances of the orthographic variant *aš-šu-mi*-POSS in ACCOB occur in letters related to northern sites and to the Diyala region[469]. Among the exceptions to the prominence of instances from northern-related letters, it is worth noting that all three examples of the form *aššumī*-POSS stemming from the site of Isin[470] (reign of Samsu-iluna) display the same written structure as most northern areas. The occurrence of only three examples would not be indicative of any relevant salience of the letters from Isin within the group of southern-related letters, but it recalls the relevant similitude between letters from Isin and northern texts for the variable (pi,pí) (see section 3.4.2.1.3.2)[471].

3.7.2 *aš-šum-(i/mi)*-POSS

In the second type of graphic rendering of the prepositional phrase, the sign *šum* is usually followed by the sign *ia* denoting the possessive suffix first person singular in genitive. However, two more variant writings are attested: either the sign *šum* is followed by *i* and another sign (*aš-šum-i-ka*), or is followed by the signs *mi* or *me* (*aš-šum-mi-i-ka*).

[469] AbB 8, 42 :6; AbB 10, 136:5; OBTIV 14:5; OBTIV 23:21 and 26; Sumer 14, 15:21, 22 and 26. No other type of writing for the variable has been attested in the Diyala region, however the amount of data for this region is considerably scantier.
[470] AbB 9, 231:3; AbB 14, 204:6 and AbB 14, 206:20.
[471] The other southern letters with a 'northern' spelling for *aššumī*-POSS are: AbB 3, 90:4; AbB 4, 121: 12 (letter from Lu-Ninurta); AbB 4, 139:23; AbB 5, 3:4; AbB 5, 168:3; AbB 5, 178:4; AbB 5, 192:5; AbB 10, 186:5; AbB 11, 23:4; AbB 11, 26:3; AbB 11, 185:4; AbB 13, 119:4; AbB 14, 148:13; AbB 14, 160:3; AbB 14, 222:5; BaM 18, 8:4 and BaM 18, 11:3.

The spelling *aš-šum-(i/mi)*-POSS is mainly attested in letters related to southern sites, especially in Ur[472], Larsa[473] and Nippur[474]. Only five exceptions oppose the pattern:

- Edubba 7, 77:4. This letter from Sippar has a few striking features that separate it from the rest of the letters from Sippar in the corpus. Al-Rawi and Dalley (2000) noticed:

  > The greeting with 3 gods [Šamaš, Ea and Marduk], and "the cattle and household are well" is unusual. (Al-Rawi and Dalley 2000, 86).

  Apart from the form *aš-šum-ia*, the greeting formula contains the sign DU for /ṭu/ in *li-ba-al-li-ṭù-ka*, an orthography consistently found only in southern Mesopotamian letters[475].
- The same form occurs in AbB 5, 218, a letter from Awil-Adad, already mentioned regarding the variable (ṭú,ṭù) in section 3.3.4.3.
- AbB 14, 19:5 is a letter probably found in Kiš. The greeting formula includes only the goddesses An-Inanna and Nanāya to which Veenhof (2005) adds:

  > This attests the cult of a triad of gods of Uruk by worshippers who went into exile to Kiš during the reign of Samsu-iluna (Veenhof 2005 [AbB 14], 19, note 19c)[476].

  The sender, therefore, although perhaps established in Kiš could have retained southern scribal traits from a different original settlement.
- AbB 10, 36:4, a very short letter, presumably belonging to an archive in Kiš
- AbB 5, 225:18 (Sippar). The same letter contains the alternant writing *aš-šu-mi-ia* (l. 4) in the greeting formula.

The orthographic variant *aš-šum-(i/mi)*-POSS, therefore, is clearly associated to letters related to southern coordinates in the OB letters from ACCOB. The alternative type, *aš-šu-mi*-POSS, although the only spelling straightforwardly attested in northern-related letters and in letters from the Diyala region, occurs occasionally in the correspondence from southern archives, particularly in letters related to Isin and Nippur.

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[472] All instances from Ur are of this type: AbB 11, 182:5; ; UET 5, 13:5; UET 5, 33:4; UET 5, 34:4; UET 5, 40:4; UET 5, 43:15; UET 5, 44:5; UET 5, 51:4; UET 5 56:4; UET 5, 70:4; UET 5, 71:5; UET 5, 74:4; UET 5, 77:4; UET 5, 81:33; UET 5, 82. The only *aš-šu-mi*-POSS form in a letter possibly related to Ur is AbB 13, 119:4 (See Fiette 2016 [NABU 16]:4).

[473] AbB 4, 72:12; AbB 4, 132:18 (this letter is from Sin-iddinam, Hammurabi's official in Larsa. It should be noticed, however, that Sin-iddinam's letters will be included into the northern-related group in the following chapters. See comments in chapter 5). AbB 9, 134:6; AbB 11, 168:5; AbB 11, 178:5; AbB 11, 180:4; AbB 11, 187:5; AbB 12, 78:6; AbB 13, 34:8 and 11; AbB 14, 110:4; AbB 14, 165:5; AbB 14, 166:5; ABIM 22:4; ABIM 28:5; HE 107:20; RA 102, 6:4; YOS 15, 36:13 (letter from Lu-Ninurta).

[474] AbB 5, 165:4; AbB 5, 166:4; AbB 5, 173:4; AbB 5, 175:5; AbB 5, 177:5; AbB 5, 199:5; AbB 11, 2:5; AbB 11, 3:5; AbB 11, 4:5; AbB 11, 11:5; AbB 11, 16:5; AbB 11, 18:2; AbB 11, 27:7; RA, 102 11:4. The rest of the instances of the form *aš-šum-(i/mi)*-POSS in southern-related letters are: AbB 3, 72:5; AbB 3, 89:5; AbB 5, 10:9'; AbB 5, 11:5; AbB 5, 20:5; AbB 5, 23:4; AbB 5, 138:20; AbB 9, 9:4; AbB 10, 175:4; AbB 10, 184:4; AbB 11, 143:4; AbB 14, 115:4; AUWE 23, 76:2; RA 30, p.98-100:20; RA 102, 8:4.

[475] Al-Rawi and Dalley (2000) indicate that 'a date to the reign of Apil-Sin is possible' (Al-Rawi and Dalley 2000, 87).

[476] See Charpin 1986, 411ff.

3.8 Final remarks on orthographic variables

Chapter three has presented a survey of the variant forms of a group of orthographic variables as they occur in a large corpus of OB letters. Most of the variables had been observed previously, particularly in Goetze 1945, but the examination of the distinctive orthography of the prepositional clause *aššumī*-POSS (section 3.7) and the particular occurrence of distinct logograms with or without complements was drawn from the author's observations of the letters in the corpus. The data obtained from the texts of the corpus has supported the claim that the orthography of some variables correlates positively with a broad regional classification of the letters. Thus, as expected, the orthographies *ṭù*, *ṭe*, *pi*, *pe*, the CVC complements for the logogram A-ŠÀ and the spelling *aš-šum*-(i/mi)-POSS occur significantly more often in letters related to southern locations.

However, the evidence from the corpus demonstrates that:

1. The connection between these spellings and a geographical element of variation does not imply a bi-directional link. While it seems relevant to associate the orthographic variables mentioned above with southern-related texts, the evidence in ACCOB rejects the assumption that southern texts necessarily, or even more frequently than not, resort to these orthographic variants.
2. Not all the general assumptions made by Goetze for OB mathematical texts can be replicated in the data from ACCOB. In particular, the categorization of all CV signs denoting /ṭ/ into the same distributional pattern of geographical significance is rejected by the data from in the corpus. Although the sign DU tor /ṭu/ is significantly associated to southern-related texts, DA and DI (for /ṭa/ and /ṭi) are the most common spellings found in the corpus, including also northern texts. In fact, the data show a gradual distinction in the use of signs related to the vowel rendered; the most frequently attested combination of signs to denote the three vocalic articulations /ṭa/, /ṭi/ and /ṭu/ in the corpus combines D-signs for /ṭa/ (and, less often, /ṭi/), and T-signs for /ṭu/.

Variation also occurs within archives, senders or even letters. This fact has traditionally raised concerns about the validity of establishing lectal and orthographical distinctions for different OB regions. Stol (1971) justifiably comments on the assignment of 'northern' and 'southern' labels to traits in the early OB texts from Waters for Larsa (Walters 1970):

> The author's reflections on sibilants, emphatic stops and labials (pp. xxi, xxii), prove how precarious is the assigning of texts to "northern" and "southern" scribal practices, especially since inconsistencies do exist within the same archive, and even in one and the same text. (Stol 1971 [BiOr 28], 366) [477].

However, the quantitative approach to a large collection of letters shows that not all variables are affected in the same way by diverse spellings. Furthermore, both linguistic and extra-linguistic factors might be argued as explanatory for the internal orthographic variation within regional groups of letters, which is, nonetheless, also an informative element to be considered.

[477] It should be noticed that Walters (1970) follows a general North-South division of features based in Goetze's observations (Goetze 1945). This leads the author to interpreting orthographic features of the texts that contravene the distribution of spellings attested for OB letters in ACCOB: 'The orthography TA, TE, TI is northern; DU is southern' (Walters 1970, xxi).

In this regard, it is significant that southern-related letters, despite being less attested in the corpus than northern letters and although they do not include data from the late OB period, present a noticeable higher degree of variability than northern-related letters[478]. To some extent, this might be caused by the nature of the texts included in the corpus. Thus, the southern group consists of a proportionally larger number of early texts than the northern group[479], and includes a number of locations that perhaps differed orthographically from each other more clearly than the northern cities, which were geographically and politically less disperse[480]. Thus, subtle differences appear in the southern-related data for letters from Isin (sign *pí* and *aš-šu-mi*-POSS)[481], or Uruk (sign *ṭe₄*). Nevertheless, the concentration of regionally-bounded traits in letters from the high official Lu-Ninurta suggests that factors of mobility and scribal practice can also be responsible for the different degrees of internal orthographic variation.

Nonetheless, some correlations between spacial or temporal variables and orthographic variants are supported by a quantitative display of data that aims to minimise the potentially distorting effect of outliers, i.e., instances that, for some reason, oppose the general orthographic tendency of a coherent group of texts. Moreover, many exceptional spellings within sub-divisions of letters often appear grouped together in specific salient letters: e.g. signs *ṭù* and *pi* in letters from Atahzum; the elements *ṭù* and *aš-šum*-POSS in AbB 5, 218 and Edubba 7, 77, (all of them initially classified as northern-related letters); and the elements in certain letters from Lu-Ninurta. This suggest that the classification of the texts in the corpus, despite all the uncertainties and pitfalls that challenge its accuracy, holds a minimum degree of coherence that allows for the enhancement of lectal examination of the data. The next chapter will build on the conclusions about orthographic categorization of the letters in ACCOB to provide a study of the distribution of variables associated to linguistic variation in the Old Babylonian language.

4. PHONETIC VARIABLES OF OLD BABYLONIAN: SIBILANTS

4.1 Introduction

In an article published in 1958, Goetze commented: 'the sibilants of the Akkadian language have been much discussed' (Goetze 1958, 10). Half a century later, new studies have contributed to the discussion about the characteristics of the consonantal system of Akkadian, making the subject of sibilants a vexing issue for comparative Semitic studies (see Farber 1985). However, it is still accepted that many aspects of this subject are not sufficiently known and require further research:

[478] There are also exceptional variables, such as (ṭa,ṭá) that are expressed almost exclusively within the northern sub-group of the corpus.
[479] But not larger than the Diyala región.
[480] Most of the northern texts relate to: Sippar, the not too distant city of Babylon, and locations probably nearby Babylon such as Lagaba and Kiš. Politically speaking, the area was also more stable than the South during the OB period attested by the letters in ACCOB.
[481] A chronological factor might also be responsable for the apparent discrepancy of letters from Isin.

> The phonological processes which involve the sibilants and their underlying phonetic realization are not well understood. (Streck 2006, 215).

The aim of the present chapter is to analyse the distribution of various types of spellings representing sibilant consonants in the Old Babylonian period, as they appear in the corpus of letters ACCOB. The variables studied here differ from the variables in chapter three in the degree of relatedness by which orthographic variation associates with the phonology of OB. Admittedly, the possibility of assessing phonetic or phonological motivations for spelling variation in a language like Akkadian, which ceased to be spoken thousands of years ago, is a challenging task. Our approach to this issue must, therefore, be tentative and based on conventionally established guidelines. The interpretation of the variables included in the previous chapter, labelled 'orthographic variables', adopts a conservative consideration for their graphic variation as not (or not yet) sufficiently proven to represent or be caused by phonological divergence[482]. The variables included in chapter four, however, convey spelling variation that are more straightforwardly attributable to phonological developments in the domain of the oral language. This is not to imply that orthographic conventions and traditions did not play an important role in the final graphic representation of the language. Neither it is assumed that different spellings rendered accurately the articulatory characteristics of the oral language. Rather, the presence of an innovative spelling feature, such as the idiosyncratic use of a group of signs to represent segments rendered in a different way before, can reflect an on-going phonological change. Furthermore, this can reflect a change that diffused and settled over a speech community at some point, but is transferred only progressively to the written domain. However, it is acknowledged in the present work that the weight of scribal tradition can also prevent some features from the oral speech from being reflected in the written record, particularly in specific genres and writing schools. In any case, the rich array of written variation in letters[483], whilst cannot be expected to reflect every aspect of lectal variation at the oral level, provides valuable evidence of dissimilarities that, as in the case of variation in the representation of sibilants, can be related to phonological developments of the oral language.

The study of variation in the spelling of sibilants follows up the list of OB variables singled out by Goetze in his article 'The Akkadian dialects of the Old-Babylonian Mathematical texts' (Goetze 1945), that provided also most of the spelling variables studied in chapter three. However, Goetze 1945 does not discern between spelling variables plausibly motivated by phonological differences and variables that could rely more directly on orthographic and scribal traditions. For example, both the spelling of CV signs representing variation for clusters of sibilants, and the use of distinctive forms of phonetic complements (of the type CV or CVC) accompanying the logogram A.ŠÀ ('field') appear listed without formal distinction as features that characterise an overarching term, 'dialect', vaguely applied to distinguish northern and southern OB mathematical texts (see Table 2 in 3.2.2).

Nevertheless, in contrast to other variables proposed in Goetze 1945 and studied in chapter three, the different graphic representation of 'Syllables beginning with samekh' and 'Syllables ending with samekh' (variables about sibilants in Goetze's list of 'dialectal' features[484]), is now largely believed to reflect diachronic phonological changes in Akkadian

[482] Even though diatopic phonological variation is a phenomenon that can be expected for any natural language spread over a territory like the area in which OB was spoken four thousand years ago.
[483] Letters are commonly assumed to be as close to speech as traditional non-fictional historical texts can be (Elspass 2012, 156).
[484] Goetze 1945, 146.

(Farber 1985, Sommerfeld 1991). As it is, the Old Babylonian period witnesses a pivotal stage of variation and change in this process, which left a significant imprint on the diverse spelling systems attested in the written record.

4.1.1 OB spellings and OB sibilant phonemes

The phonetic inventory of the different lects covered by the term 'Akkadian language', a label that applies to a spectrum of dialects spreading over two thousand years, is naturally dissimilar and diverse. Differences among the various phonetic repertoires of the Akkadian dialects are often concealed by the fact that the only evidence of the once spoken dialects is the written record has accidentally survived until today. However, the use of different series of graphemes to render items that share etymological origin can provide evidence for phonetic and phonological diversity and variation. This is particularly observable in the consonantal inventory of the Akkadian sibilant phonemes. Thus, the analysis of the sets of graphemes with an equivalent sibilant value, and the etymological information provided by comparative Semitics show that certain Akkadian orthographic conventions are related to processes of phonological change. One example of this can be observed in the contrast between Old Akkadian spellings and the orthographies of subsequent periods of Akkadian (i.e. Ur III Akkadian, OB etc.) involving two fricative phonemes reconstructed for an early phase of Akkadian as *θ and *s[485]. In Old Akkadian texts written during the Sargonic period, the distinctiveness and contrast between both phonemes can be proved to be at least partly manifest[486] by the practice of using two different sets of signs to denote two discrete phonemes: syllabograms of the S-series rendered clusters containing *s, and syllabograms of the Š-series segments containing *θ[487]. However, in the following Ur III period, both sets of signs appear to be used somehow promiscually[488]. Furthermore, in subsequent stages of Akkadian (OB, MB, etc.), only one type of the mentioned sets of graphemes, the group of Š-signs, is employed in the writing of consonants etymologically derived from both *θ and *s. This evolution in spelling indicates that by the II millennium BCE a merger between the two phonemes was completed in the attested dialects of Akkadian[489].

The array of phonographic signs to render sibilant consonants in OB texts is varied and their distribution across the documental record is complex. However, as will be shown later, several studies on spelling variation in syllabograms have shed light on the intricacies of the usage of different sets of signs, putting them in relation with diachronic

[485] An Old Akkadian phonemic value for this 'proto-phoneme', here conventionally represented as *s, has been suggested to be analogous to /s/: 'Möglich ist eine Aussprache von SA (etym. *š*) als /s/ (wie amurr., arab. und südsemit.)'. (Sommerfeld 1995 [GAG^3, §30], 36). Cf. Gelb 1961: /š/. Furthermore, the form encompasses two different 'Proto-Semitic' phonemes referred to as *$\check{s}$ and *$\acute{s}$ (Sommerfeld 2010, 150) or *s and *$\acute{s}$ (Hasselbach 2005, 136), that had probably already merged by the time of the Sargonic empire (Sommerfeld 1995, 36; Gelb 1961, 51).

[486] See the details of variation in Sommerfeld 2013, 246.

[487] For this orthographic phenomenon see Sommerfeld 1999, 26, Kogan 2011, 86-87 and Hasselbach 2005 (with a critical review in Sommerfeld 2013, 246 ff.).

[488] Hilgert 2002, 128, Sommerfeld 2010, 150.

[489] Sommerfeld (1999) comments: 'Im altakkadischen Syllabar geben die Werte der Gruppe I [S-signs] die Äquivalente der semitischen Phoneme *$\check{s}$* und *$\acute{s}$* wieder, die der Gruppe II [Š-signs] entsprechen semitisch *$\underline{t}$* und die der Gruppe III [Z-signs] repräsentieren semitisch *s z $ṣ$ $\underline{d}$ $\underline{z}$ $ḍ$*. Diese Einteilung wird schon nach dem Ende der Akkade-Zeit nicht mehr eingehalten und das System dann in der altbabylonischen Zeit völlig neustrukturiert, wobei offentsichtlich Lautverschiebungen den Grund für die Aufgabe des altakkadischen Systems bilden'. (Sommerfeld 1999, 26). For a similar merger from a period former to the Sargonic writings, see Sommerfeld 2010, 150 ff.

developments and diatopic variables (i.a. Goetze 1958, Farber 1985, Sommerfeld 1995 and 2006, Streck 2006).

With regard to the OB writing system, and specifically the distribution of CV signs, the OB graphic inventory distinguishes three main types of graphic sets of equivalence for the representation of sibilant consonants. Each set of signs consists of at least three different graphemes to discriminate between the vocalic value of the CV syllabograms: /a/, /i/ and /u/. The graphemes are accordingly named by means of conventionalized Latin-based characters that aim at mirroring the stereotyped phonological characteristics of the syllables represented by the signs: e.g., the S-set of signs includes the string of signs conventionally labelled with the names SA, SI and SU, which for OB and other periods of the Akkadian language are believed to represent the phonological segments /sa/, /si/ [490] and /su/. However, as was shown for the representation of stops consonants in chapter three, the Akkadian syllabary does not allow for an unequivocal correspondence between sets of signs and sets of phonemic clusters. For example, the CV signs of the Z-series are employed in various dialects of Akkadian, including OB, not only to render the series of phonemes transcribed *za*, *ze*, *zi* and *zu*, but they also occur in the graphic representation of two other series of sibilant phonemes transcribed with the distinctive forms *ṣ* and *s*.

The three main sets of graphemes for the representation of sibilants in OB are: Z-signs (ZA, ZI, ZU), S-signs (SA, SI, SU) and Š-signs (ŠA, ŠE, ŠI, ŠU)[491]. These three sets of signs render four equivalent classes of consonants, conventionally transcribed with the characters *z*, *s*, *ṣ* and *š* respectively, but their distribution does not rely on a discrete one-to-one relationship. For Old Babylonian CV-signs:

> Z-signs can render segments transcribed with the consonants *z*, *ṣ* and *s* (transliterated *za, ze, zi, zu; ṣa, ṣé, ṣí, ṣu* and *sà, sé, sí* and *sú*)[492],
>
> S-signs render segments transcribed with the consonant *s* (transliterated *sa, se, si, su*),
>
> Š-signs render segments transcribed with the consonant *š* (transliterated *ša, še, ši, šu*).

The modern transliteration and transcription of the Akkadian consonants, represented here by characters in italics (*z*) should not be confused with their phonological representation, conventionally realised by placing the symbols that represent the phonemes between slashes (/z/). While the former is used to transmit cuneiform texts into a format more accessible for publishing, and for modern readers it facilitates the task of identifying roots and morphemes across different texts/dialects[493], the latter focuses on reflecting the main sound properties[494] of the linguistic forms represented in the written texts. Consequently, the transcriptions of Akkadian texts (with elements like *za, ṣe, su* etc.) aim at minimising the different forms in which etymologically convergent lexemes might manifest themselves in different documents. Therefore, transcribed normalizations are naturally stable across different periods but render forms that might be written with signs pertaining to different

[490] The sign SI is also assumed to realize /se/.
[491] Note that other signs such as ZÍ or SA_6 are also commonly used in OB texts, including letters.
[492] Diacritics in the transliterations are used to help identify the type of sign used in the original text. Thus, in the transliteration *sà*, the accent indicates that a segment, [sa], is written by means of the sign ZA, and not with the sign SA, which in turn is transliterated *sa*. For a critical view of conventional transliterations in Akkadian see Westenholz 2006.
[493] Sommerfeld 1999, 22 ff., Westenholz 2006, 253.
[494] The term 'phoneme' is based on the Greek word for 'sound'.

sets of graphemes (e.g., a lexeme such as *sissiktum* 'hem, fringe' can be written using the signs ZI or SI[495], but the transcription would remain the same: *sissiktum*), and can occur in documents stemming from largely disparate temporal and regional coordinates.

On the other hand, phonological representations of linguistic systems, while consisting of abstractions of patterns[496], are inevitably linked to the phonetic properties of the contrasting sounds of a language. Therefore, although the phonological system of a certain language or lect does not reflect all the spectrum of sounds and allophones of the linguistic system, it reflects its main contrastive sound categorizations[497]. For Old Babylonian, the convention in assyriological scholarship is to relate the four signs of the transcriptions: *z*, *ṣ*, *s* and *š* with four phonemic values represented by conventional symbols that mirror the transcriptional system: /z/, /ṣ/, /s/ and /š/[498]. It should be noted, however, that these conventional phonemic forms represent phonemes which include allophones and whose basic sound properties are not completely apparent nor universally agreed upon[499]. Some of these symbols (/ṣ/ and /š/), common in the description of Semitic languages, are useful for comparative purposes (among different Semitic languages or different dialects of Akkadian), but differ from the standardised organigram of the International Phonetic Alphabet (IPA). On the other hand, the pronunciation of OB sibilant phonemes, particularly those traditionally represented as /š/ and /ṣ/, is difficult to ascertain[500]. In this respect, Westenholz points out that:

> Our conventional pronunciation of Akkadian is rooted in the historical accident that the early Assyriologists were also Old Testament scholars; and they of course applied their school pronunciation of Hebrew to the new language. (Westenholz 2006, 257)[501].

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[495] Cf. SI-SI-*ik-ti* (A.1289+M.13103+M.18136, iii:33) and ZI-*is*-ZI-*ik-ti* (M.6242:16').

[496] Zsiga 2013, 199.

[497] Occasionally, in the description of the phonemic systems of ancient Semitic languages, the difference between what are synchronic phonemic sketches of a language (or dialect) is not sufficiently distinguished from what are values used in cross-linguistic comparisons of cognate phonemes etymologically derived from a common source. Thus, for example, in the presentation of Amorite by Streck (2011b), we find the ambiguous description of Amorite sibilant phonemes: 'Consonantal phonemes are […] /z/ (pronounced [dz]), /s/ (pronounced [ts]), /ṣ/ (perhaps merger of Proto-Semitic */ẓ/, */ṣ/ and */ḍ/, pronounced [ts']?)' (Streck 2011b, 454). In this case, if it is assumed that the basic phonetic realization of a phoneme is an affricate form, the synchronic representation of the phonemic sketch of the language should represent this articulatory property, e.g. /t͡s/, rather than presenting different forms for phonetic and phonological representations: '/s/ (pronounced [ts])'.

[498] Cf. the same notation in studies such as Goetze 1958 or Streck 2006. It should be noticed, however, that Streck (2006) concludes that OB /z/, /ṣ/ and /s/ are in fact affricate consonants (Streck 2006, 232), with fricative allophones (Streck 2014, 16).

[499] It is for instance not clear whether, e.g., the phoneme represented here by /z/ would in fact be affricate in the OB period, hence /d͡z/ (cf. Kogan and Loesov 2005, 748); furthermore, if it represents an affricate /d͡z/ in allophonic distribution with /z/ (Streck 2014, 16), it is unclear which allophone should be singled out to represent the basic contrastive phoneme.

[500] For OB, the phoneme represented by /ṣ/ is sometimes interpreted as a voiceless dental glottal [t͡sʔ] (e.g. Faber 1985, 104, note 28 with further bibliography) or ejective affricate [t͡s'] (Streck 2011, 14 'Altbabylonisches Lehrbuch', 1st edition [notice that the description of the phoneme /ṣ/ is missing in the phonological grid of the second edition of the book: Streck 2014]). On the other hand, the phoneme represented by /š/, is generally thought to render either [ʃ] or a lateral sibilant [ɬ] (Streck 2006, 233 ff.; Westenholz 2006, 257), perhaps also affricate [t͡ɬ] (Streck 2014, 17).

[501] According to Goetze 1958, 10, note 1: 'J. Oppert was the first to adopt the transliteration which we still follow today: *š* where etymologically Hebr. *š* corresponds, *s* where etymologically Hebr. *s* corresponds (Éléments de la grammaire assyrienne, 1st. ed. 1860, p.5)'.

For the lack of a generally accepted phonetic description, and for the sake of clarity in references to previous studies of OB phonology, the traditional forms of phonological representation /ṣ/ and /š/ will be also used in the present study, bearing in mind that the abstraction of these symbols might cover different realizations of the phonemes, not only regarding allophonic deviations, but also with respect to lectal variation[502].

4.1.2 OB sibilant consonants /z/, /ṣ/ and /s/ in a historical perspective.

The graphic and phonemic inventory of the main equivalence sets of OB sibilants contrasts with that of previous and subsequent dialects of Akkadian. As was shown in the previous section, three main series of CV graphemes (Z-signs, S-signs and Š-signs) render, in OB, four basic phonological distinctions for sibilants (conventionally, /z/, /ṣ/, /s/ and /š/)[503]. However, while the same sets of graphemes remain to be employed to a large extent throughout different stages of Akkadian, from Old Akkadian to Middle Babylonian, the phonological systems of the different stages are believed to differ regarding sibilant consonants. This is correspondingly reflected by the distinctive ways of pairing the sets of graphemes with the sets of phonemes in Old Akkadian, Old Babylonian and Middle Babylonian.

For the representation of the OB phonemic abstractions /z/, /ṣ/ and /s/, a comparison of the sets of CV graphemes used to render the corresponding phonemes[504] in the former Old Akkadian period and in the subsequent Middle Babylonian period, shows a singular distributional cline. In the oldest stage, Old Akkadian, the three sibilant phonemes corresponding to /z/, /ṣ/ and /s/ were indistinguishable in CV syllabograms, being all three of them rendered by one single set of graphemes: Z-signs (ZA, ZI and ZU). At the other side of this period range, in the Middle Babylonian writing system, whilst the set of Z-signs represents only CV segments with /z/ and /ṣ/, the sibilant /s/ is invariably rendered with a different group of graphemes: the S-series. Finally, the intermediate period, OB, presents a transitional stage in which Z-signs can still represent all three phonemes /z/, /ṣ/ and /s/, but S-signs are already employed as well to denote CV clusters with the consonantal phoneme /s/.

Table 33, below, shows this development[505]. Since the characteristics of the corresponding phonemes evolved over time, and, for example, the Old Akkadian counterpart of the Middle Babylonian phoneme /s/ is believed to be an affricate: /t͡s/ (see below), a distinctive comparative notation is used in the table below: |s*|, to represent equivalent phonemes that, despite sharing the same origin, might present unalike phonemic properties in different periods[506].

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[502] No dialectal difference in the articulation of /š/ and /ṣ/ for different regions has been mentioned in studies of OB phonology, except for notes about assimilation of /š/ with other sibilants such as those in Goetze 1958. See chapter 4.1.3 below.

[503] See, i.a., Goetze 1958.

[504] I.e., phonemes that despite processes of phonetic and phonological change share a common origin.

[505] See Goetze 1958; Faber 1985, 105; Sommerfeld 1999, 26-28 and Sommerfeld 2010, 150 ff.

[506] Therefore, the phonemic abstraction |s*| takes the character form of the MB phoneme /s/ but it is placed between vertical bars and marked with an asterisk to represent all the following reconstructed equivalent phonemes and allophones for chronologically different dialects: OAkk /t͡s/, OB /t͡s/ and /s/, and MB /s/. It is not clear whether |z*| and |ṣ*| also developed phonological change between the three stages of Akkadian. Cf. the comments of Faber (1985), who assumes a sound change for |z*| (but not for |ṣ*|) between Old Akkadian and Middle Babylonian (Faber 1985, 105). More sceptical about these changes are Kogan and Loesov (2005): 'Accordingly it is only for one of the three phones (s) /c/ that positive evidence concerning loss of affrication can be obtained' (Kogan and Loesov 2005, 748).

Table 33: Distribution of Z- and S-signs of the CV type to render three equivalent sibilant phonemes in three periods of Akkadian.

	Old Akkadian	Old Babylonian	Middle Babylonian
Z-signs	|z*|, |ṣ*|, |s*|	|z*|, |ṣ*|, |s*|	|z*|, |ṣ*|
S-signs		|s*|	|s*|

The different structure in the grouping of phonemes among the OAkk, OB and MB writing systems manifests a sequential redistribution of CV signs that results in a progressive differentiation of /s/ from the other two phonemes (/z/ and /ṣ/) by the usage of a distinctive graphic set (S-signs). The process includes also an intermediate stage of variation (OB), which suggests that the graphic reorganization of the relationship between graphemes and phonemes is not random but motivated by some phonological development across the dialects represented in the table.

This picture is complemented by the correlation in the evolution of the writing of CV signs to render the sibilants that merged to become /š/ in Old and Middle Babylonian:

Table 34: Distribution of S- and Š-signs of the CV type to render OB and MB /š/ and its two corresponding OAkk phonemes[507].

	Old Akkadian	Old Babylonian	Middle Babylonian
S-signs	/s/ (<**ś̌* and **ś*)		
Š-signs	/θ/	/š/ (<**ś̌*, **ś* and **θ*)	/š/ (<**ś̌*, **ś* and **θ*)

Table 34 shows that the set of S-signs, absent from the Old Akkadian column in Table 33, had its own function in Old Akkadian, representing CV clusters beginning with a sibilant (conventionally /s/) that contrasted in some way with the Old Akkadian equivalents of /z/, /ṣ/ and /s/.

Therefore, the set of S-signs, that progressively specialised to end up rendering in MB one specific phoneme (/s/), was used in the earlier period to mark a contrast between the group |z*|, |ṣ*|, |s*| and other type of sibilant phoneme: /s/ (which in turn is assumed to have resulted from an earlier merge of **ś̌* and **ś*). Once the Old Akkadian /s/ (<**ś̌* and **ś*) merged with /θ/ (see comments in section 4.1.1, above), the resulting new phoneme, equivalent to OB /š/, was consistently represented by the series of Š-signs. Subsequently, the group of S-signs began to operate another graphic contrast, previously unmarked, whereby |s*| is distinguished from |z*| and |ṣ*|.

The redistribution of contrasting functions of the S-signs from Old Akkadian to Middle Babylonian suggests a certain articulatory similarity between two phonemes of distinct origins: on one side the Old Akkadian phoneme conventionally represented /s/[508], allegedly derived from a merge of early (proto-)Semitic **ś̌* and **ś* (in Table 34); and on the other

[507] The notation of the type |z*| used in Table 33 to facilitate a one to one phoneme correspondence among dialects despite potentially divergent phonemic properties, is not employed in Table 34 because, unlike the former, it contains an early phonological merge that prevents a one to one comparison between early and later phonemes.

[508] For its phonetic properties see footnote 485, above.

side, the late Middle Babylonian phoneme /s/, which before was graphically indistinguishable from the Old Akkadian equivalents of the later phonemes /z/ and /ṣ/ (Table 33).

Table 35: Scheme of two originally diverse consonantal phonemes /s/, rendered by S-signs (of the CV type) in Old Akkadian, Old Babylonian and Middle Babylonian [509].

	Old Akkadian	Old Babylonian	Middle Babylonian
S-signs	/s/ (<*š and *ś)	/s/ (<*t͡s) (also rendered by Z-signs)	/s/ (<*t͡s)

To account for this characteristic rearrangement of graphic signs and the correlated historical evolution of equivalent phonemes, Farber proposed an interpretation that has gained general acceptance, the 'affricate hypothesis'[510]. According to this explanation, Old Akkadian, as well as Proto-Semitic, presented a triadic system of sibilant consonants in which the forerunners of the later phonemes, here conventionally /z/, /ṣ/ and /s/, were all realised as affricate sibilants: i.e. /d͡z/, /t͡s'/[511] and /t͡s/, respectively. This phonetic property is not only suggested by the graphic structure of signs presented above. It also derives from the study of transcriptions of Semitic words into other languages[512], and from other internal evidence in Akkadian, namely, the graphic representation of the three sets of sibilant phonemes compared in Table 33. Furthermore, the behaviour of dental phonemes in contexts of contact with the initial sibilant consonant /š/ of pronominal suffixes points out, according to Faber, to the same conclusion:

> The evidence that this common manner was affrication comes from the well-known spelling variations in the pronominal suffixes containing -S_1 (Middle Babylonian *š*): *-šu* "his," *-ša* "her," *-šunu* "their," and so on. In Middle Babylonian, any combination of dental stop or sibilant with the sibilant of the pronominal suffixes is written with the S series; instances of the suffixes preceded by other sounds are written with the Š series. However, the facts presented by Aro (1959) and Goetze (1958) clearly show that **this difficult spelling alternation is the outgrowth of a long historical development**[513]. In Old Akkadian, the suffixes would, in the ordinary course of events, have been written with the S series, and they are in fact so written when preceded by a sibilant (for example, *e-re-SU-nu* "their tilling" [<*erēšum*, "to till"]). However, combinations of dental stop + -S_1, are written with the Z series (as in *qa-ZU* "his hand," *i-ZU* "his arm"). Given that the sequence of homorganic stop and fricative is what characterizes an affricate, uniform phonetic interpretation of the Z series requires interpretation of Old Akkadian reflexes of *Z S Ṣ[514] as affricates. (Farber 1985, 103)[515].

[509] As will be shown in section 4.2, S-signs also render, in OB texts, a sibilant phoneme etymologically different from the phoneme /s/ < * t͡s shown in Table 35.
[510] Faber 1985. Notice that some of these ideas were outlined previously in Diakonoff 1980.
[511] For the phonetic characteristics of this affricate phoneme see footnote 500.
[512] Hoch 1994. For a complete account of the evidence for this phenomenon see Kogan 2011.
[513] Emphasis added.
[514] In Faber 1985, the sign here represented Ṣ appears as: 'S?'.
[515] A similar description of the contact between dental and sibilant phonemes was anticipated by Goetze (1958): 'dental *tś* remained for some time as an **affricate**, but ended up as double samekh in Middle Babylonian' (Goetze 1958, 148). [Emphasis added].

Subsequently, the early affricate sibilants, including those from dental-sibilant contact contexts, would eventually, in the course of the history of Akkadian, become fricatives via a process of lenition. The phoneme /t͡s/ would, therefore, develop into /s/, a non-affricate sibilant that probably resembled the Old Akkadian /s/ (<*š and *ś). According to this explanation, the phonetic change /t͡s/ > /s/, would have enabled the identical graphic representation by means of CV S-signs for two similar phonemes derived from different phonological backgrounds[516].

The deaffrication of Akkadian sibilants is further examined by W. Sommerfeld (in Von Soden 1995 (GAG[3]), Anm. §30[517]), focusing on the spelling variation in OB to render /s/ by means of two different sets of graphemes: Z-signs and S-signs. This constitutes an intermediate stage between the graphic representation of the equivalent phoneme for /s/ in Old Akkadian (affricate and consistently written with Z-signs), and in Middle Babylonian (deaffricate and regularly written with S-signs). The existence of variation in the OB representation of the phoneme /s/ had already been noticed by Goetze (1945 and 1958), who observed the main contextual linguistic-internal constrain for a spelling variation in certain OB texts:

> Samsi-Adda and his sons, when marking samekh[518], follow the method also encountered in the Code of Hammurapi: initially, and medially where geminated, the set ZA ZI ZU is employed; medially, whenever single, the set SA SI SU. (Goetze 1958, 146)[519].

It was also suggested that words in which S-signs occur initially or medially (here in spite of the required doubling), the spelling should be interpreted as containing a different phoneme, that Goetze named s_x[520]. A similar idea was also proposed by Gelb (1961), who, in turn, designated the new phoneme s_4. However, the reconstruction of an additional sibilant phoneme has been abandoned in recent studies[521].

Nevertheless, as will be shown in section 4.1.3, Goetze limited the reach of this spelling variation (Z-signs for /s/ in word-initial and doubled and S-signs for /s/ elsewhere[522]) to a reduced corpus of exceptional cases of OB texts. By contrast, it was assumed that the most salient spelling contrast was related to the North-South geographical distinction, the main source of variation in the representation of /s/ with series of Z- or S-signs. Thus, Goetze (1958) considers that the spelling system described above, and observable in the Code of Hammurabi, 'deviates from the standard by spelling initial s (in archaic fashion) with ZA ZI ZU' (Goetze 1958, 144). These variables will be assessed in the analysis of variation in the corpus of OB correspondence (ACCOB) in the next section.

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[516] It is unclear whether /s/ would be the first or even the only phoneme, out of the three original affricate forms |z*|, |ṣ*|, |s*|, to undergo deaffrication (see footnote 506, above). Streck (2006) concludes that 'the theory that /z/, /s/ and /ṣ/ are realized as affricates in Old Babylonian is well grounded' (Streck 2006, 233). About the subsequent phonological change, Streck adds: 'since no similar sign change can be observed with /z/ and /ṣ/, deaffrication apparently started with /s/' (Streck 2006, 232). Moreover, Streck sees no evidence for the idea expressed by Izre'el and Cohen (2004, 10), that during 'most' of the Old Babylonian period, also /z/ and /ṣ/ had become deaffricate (Streck 2006, 233). For a similar view about the lack of evidence to assume a deaffrication of |z*| and |ṣ*| in Akkadian see Kogan and Loesov 2005, 748.

[517] Sommerfeld 1995.

[518] I.e., the phoneme here represented by /s/.

[519] A first description of the spelling practice for sibilants in the texts of the Code of Hammurabi was published in Goetze 1937.

[520] Goetze 1958, 146.

[521] See, i.a., Faber 1985, 106, Westenholz 2006, 254 and Kogan 2011, 83-84.

[522] Except in contact between dental/sibilant and /š/ from pronominal suffixes.

Nevertheless, the distribution of two distinct series of graphemes to render /s/ (Z-signs and S-signs) in correlation to word-internal parameters becomes central in Sommerfeld 1995, where the author refines the observations made by Goetze for the Code of Hammurabi and explains the variation in terms of an on-going process of deaffrication of /s/ in OB:

> Diese Affrikatenreihe wird aB mit der Zeichengruppe ZA-ZI-ZU geschrieben, während der einfache Sibilant /s/ mit der Gruppe SA-SI-SU wiedergegeben wird. aB läßt sich eine Deaffrizierung /t͡s/ > /s/ beobachten, die im KH klaren Regeln folgt: Am Wortanfang und bei Verdoppelung bleibt die Affricate erhalten, intervokalish wird bei einfacher Konsonantenlänge deaffriziert. (Sommerfeld 1995 [GAG^3 §30], 35-36).

This phonologically motivated explanation for the pattern of spelling variation has gained general acceptance[523]. However, whilst this spelling model is consistently applied in some OB texts, it is not followed in others. This shows that an additional layer of variation applies, in which temporal and regional variables might also be factors that motivate the spelling variation concerning the OB phoneme /s/ (see, for example. the early observations about dialectal differentiation in Goetze 1945 and Goetze1958).

For the chronological circumstances affecting the application of the affricate-deaffricate pattern described in Sommerfeld 1995, it is generally assumed that the process of deaffrication progressed in time, so that in the late OB period the spelling pattern described for texts like the Code of Hammurabi in Goetze 1958 and Sommerfeld 1995, would gradually give way to a situation closer to Middle Babylonian, where all /s/ phonemes in CV syllabograms appear rendered by S-signs. A tentative schematization of this diachronic development is given in Westenholz 2006:

> [In OB] We would then be dealing with a transitory phase. In Early Old Babylonian (and in Old Akkadian and Old Assyrian), the phoneme /s/ was realised as [t͡s] in all positions, written ZA, ZI, ZU etc. By Sinmuballit's[524] time, a split[525] had occurred insofar as /s/ was pronounced [s] when it occurred single in word interior; elsewhere the affricate pronunciation was retained. In the texts of Samsu-iluna's time, we see the beginnings of the extension of the development [t͡s] > [s] to initial position and to intervocalic double, except for suffixed forms […]. In Middle Babylonian and later, /s/ was pronounced through as [s], also in suffixed forms. (Westenholz 2006, 253-254).

A similar order in the process of phonological lenition is suggested in Izre'el and Cohen 2004, where it is assumed that the deaffrication started 'first as allophones in word-initial position and when doubled, then in all positions'[526]. This assumption, which probably takes into account only the variable distribution of CV signs for sibilants, is in part contradicted by Streck (2006), who points at a different starting context for the change: 'the evidence presented here clearly reveals that deaffrication started in syllable final position whereas

[523] See, e.g., Westenholz 2006: 'The difference in the spelling of the same phoneme /s/ presumably indicates a difference in pronunciation: when single, as in *parāsim*, it was pronounced [s]; in initial position, or when doubled, as in *purussê mātim*, it was pronounced as an affricate' (Westenholz 2006, 253).
[524] Sic.
[525] It should be noted that, if we consider the affricate and fricative realizations of /s/ in OB to be allophones in complementary distribution, this implies that we understand that they are two different realizations of **one single** basic phoneme. Therefore, the use of the term 'split', which is a phonological process generally assumed to **increase the number of phonemes** from a single original form, does not apply to the case of phonetic variation for the OB phoneme /s/.
[526] Izre'el and Cohen 2004, 10.

affricates remained stable in word-initial and when doubled' (Streck 2006, 225, note 30); however, no further comment is made for the allegedly distinctive steps of change affecting sibilants in non-final syllable position.

In sum, Old Babylonian texts provide exceptional evidence for an on-going process of phonetic and phonological change, which left its imprint in the scribal spelling practices. The distribution of different spelling patterns for some clusters containing sibilants, presumably motivated by phonetic and phonological variation, is not exclusively related to chronological factors: notational systems also distribute unevenly across contemporary texts from different areas.

4.1.3 OB sibilants in a synchronic perspective.

The seminal paper about orthographic and linguistic variation across regional varieties or 'dialects' of Akkadian: Goetze (1945), presents also the first integrated attempt to establish a documented account of the synchronic variation in the representation of sibilants in OB. The study of OB sibilants was later deepened and superseded in Goetze 1958, which provided fundamental assumptions widely accepted by scholarship until the reception of the 'affricate hypothesis'. This new input led to a new revision of the OB data on sibilants and the internal causes for spelling variation (Sommerfeld 1995). Once one of the factors involved in the variation of OB spellings was acknowledged, namely the synchronic differentiation of allophones of /s/ for an affricate-fricative dichotomy, renewed interest arose in the assyriological community to pinpoint onto geographical coordinates the cases of spellings that differed from the 'allophonic pattern' found in central texts like the Code of Hammurabi[527]. The publication, in the same year 2006, of three studies and a review of an article that discuss specifically the issue of synchronic lectal variation of OB sibilants, illustrates the growing interest for the issue: Streck 2006, Sommerfeld 2006, Westenholz 2006 and Kogan and Markina 2006.

The most relevant aspects of studies referring to regional variation in the representation of OB /s/ are presented hereafter.

4.1.3.1 Goetze 1945: 'The Akkadian dialects of the Old-Babylonian Mathematical Texts' and Goetze 1958: 'The Sibilants of Old Babylonian'

In his pioneering article from 1945, Goetze makes a hypothetical initial division of the bulk of OB texts in two groups: northern and southern, which are considered to be characterised by distinctive features in spelling, grammar and lexicon (see section 3.2.2). Regarding the representation of OB /s/, Goetze (1945) isolates two geographical variables according to the onset or coda position of /s/ at the syllable level:

- 'Syllable beginning with samekh'[528]. According to Goetze's observations, the North-South difference for this variable operates in the following manner: while southern texts resemble the Old Akkadian spelling practice and render /s/ in syllable onset position with Z-signs, northern signs employ 'special' S-signs[529]:

[527] Notice that already Sommerfeld (1995), at the end of the formulation of the deaffrication pattern of variation, concludes: 'regionale und orthographische Verschiedenheiten sind warhscheinlich' (Sommerfeld 1995, 36).
[528] Goetze 1945, 146.
[529] With the exception of spellings in the text of the Code of Hammurabi.

North: SA, SI, SU (transliterated *sa, si, su*)
South: ZA, ZI, ZU (transliterated *sà, sí, sú*)[530]

According to Goetze, S-signs occasionally appear in southern texts, in exceptional cases but in a consistent way, for the spelling of certain lexemes such as *sāmum* 'red', *sebe*(t) 'seven', *samnum* 'eight', *salāmum* 'to be(come) at peace' *šasûm* 'call'; for the rendering of the term *šittum* 'remainder' and for the representation of the sound resulting from the combination of the word-ending phoneme /š/ and the initial sibilant /š/ of third person pronominal suffixes.

- 'Syllable ending with samekh'[531]. Although no graphic distinction is possible in the OB writing system for the representation of /is/ (invariably rendered by the sign IZ[532]), Goetze proposes a geographical difference in the representation of the clusters /as/ and /us/:
  North: ÁŠ[533], UŠ (transliterated *ás, ús*)
  South: AZ, UZ (transliterated *as, us*)[534]

The evidence gathered by Goetze from a collection of OB mathematical texts and presented in the article is, however, not conclusive. This can be argued primarily on the basis that, although it is true that the texts classified as 'southern' contain a preponderance of Z-signs for /s/, the only two groups of texts considered to stem from northern locations (group five and six, see Table 3 in 3.2.2) merely comprise a total of 20 items containing /s/[535]. Moreover, while 13 of these 20 cases present indeed S-signs[536], the other 7 are rendered by Z-signs: *i-sà-an-ni-iq* (x2), *sà-na-qam, ú-sà-an-ni-iq,* [s]*é-ru-uh-ma, sú-sú-lum* and *ta-ka-ba-as*[537]. Moreover, all of these instances except for one (*u-su-uh*) are attested in the seven texts classified under the rubric '6th group', whose reliability for assigning dialectal features to texts from either side of the North-South divide is compromised by Goetze's observations: 'This group combines northern and southern characteristics' and 'The 6th group comprises northern modernizations of southern (Larsa) originals' (Goetze 1945, 151)[538].

It should be noticed that the internal variation described in Sommerfeld 1995 is not considered in Goetze 1945, though it is indeed acknowledged in Goetze`s article 'The Sibilants of Old Babylonian'[539]. As was mentioned before, this observation is limited,

[530] Goetze 1945, 146.
[531] Ibid.
[532] See also Sommerfeld 2006, 367.
[533] In Goetze's original article, the sign is called AŠ.
[534] Ibid.
[535] Excluding the instances of the form /is/.
[536] *u-su-uh, ki-bi-su, i-s*[a]*-an-ni-*<iq>, *i-si-iq-tim* (x4), *pí-sa-nu-um, ki-ib-su, ta-ka-ba-ás, lu-uk-bu-ús-ma* and *lu-uk-bu-ús* (x2).
[537] Ibid., 150. Notice also the unexplained internal variation in cases such as: *i-s*[a]*-an-ni-*<iq> and *i-sà-an-ni-iq* occurring in the same text (BM 85194).
[538] It is unclear whether these observations refer to 'dialectal´ variables other than the spelling of /s/. The orthography of other distinctive features mentioned in the article (such as the different use of signs for /pi/, /pe/ or /ṭu/) seem to agree, in the texts from the 6th group, with the expected 'northern' variants. This suggests that perhaps Goetze's remarks about the mixture of northern and southern characteristics in this group are precisely based on the orthographic rendering of the phoneme /s/.
[539] Goetze 1958, 146.

however, to a few isolated texts rather than taken as a relevant feature of OB written documents[540].

On the other hand, 'The Sibilants of Old Babylonian' is an article dedicated exclusively to the OB variation on the representation of sibilants. There, Goetze presents a larger number of examples from diverse texts to illustrate the same pattern of association between spelling practices and regional variables from Goetze 1945, with the addition of comparative presentations that include different periods of Akkadian (Proto-Semitic, Old Akkadian and Middle Babylonian), as well as different regions (Susa, Upper Mesopotamia, Ešnunna and Middle Euphrates)[541]. On the other hand, the textual evidence given in Goetze 1958 to support the correlation between spelling differences and regional variation, although consisting of a larger number of examples than in Goetze 1945, it is not grounded on a discrete corpus of texts[542]. Moreover, Goetze 1958 does not provide a rigorous listing of all the relevant data included in the documents analysed for the study. Rather, the evidence presented in the paper consist of a display in footnotes of examples of orthographic instances from OB texts that corroborate the statements made in the article. However, there is no allusion to potential counterexamples or to the statistical and representative relevance of the given evidence[543]. A further critical remark about the textual sources of Goetze's study points out that the type of texts including in the survey might not be representative enough to make generalizations about OB regional differences. Streck (2006) comments:

> [Goetze 1958] mixes texts from too many different regions and periods within Old Babylonian so that the emerging picture of the sibilants is partly confusing. His difference between alleged Northern and Southern Babylonian spelling habits […] appears to be especially questionable because it is based partly on literary texts. (Streck 2006, 215, note 2)[544].

Most relevant for the present study on orthographic and linguistic variation, which examines OB letters from non-peripheral Mesopotamia, is the detailed analysis in Goetze 1958 of the spelling practices for the sibilant phonemes resulting from the contact between the onset phoneme /š/ of possessive pronominal suffixes and two types of word-final consonants derived from roots ending in: (1) dental(-alveolar) consonants or (2) /š/[545].

The conclusions for the North-South spelling variation in these two cases can be summarized as follows:

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[540] See section 4.1.2, above.
[541] Goetze 1958, 138.
[542] Unlike Goetze 1945, which is a specific study of OB mathematical texts.
[543] The only counterexamples found in the article are three instances regarding the area of the Middle Euphrates in Goetze 1958, 146, note 5; and one more, related to Upper Mesopotamia, in Goetze 1958, 146, note 9.
[544] For an approach to the use of literary texts in the study of language change in general see Anipa 2012. For Old Babylonian, Streck (2006) continues: 'Literary texts are often not only difficult to date and locate but normally also show a mix or archaisms and innovations of the colloquial language and spelling habits (Streck 2006, 215, note 2).
[545] It should be noted that Goetze always refers to this phonetic contact situation between root-ending /š/ and suffix as contact between 'sibilants' and suffixes. However, by root 'sibilants' he refers exclusively to the OB phoneme /š/, and not to other sibilants such as |z*|, |s*|, or |ṣ*|, that, as will be discussed later, also manifest idiosyncratic changes in contact with initial /š/ from pronominal suffixes.

Table 36: North-South differences in the OB spelling of the sibilant phonemes resulting from contact with onset /š/ from pronominal suffixes, according to Goetze 1958.

	North	South
dental +/š/,	Z-signs (VC and CV)	Z-signs (VC and CV)
/š/+/š/	Z-signs (VC and CV)	S-signs (VC and CV)

Although not included in Table 36, it is significant to note that the Diyala region[546], considered by Goetze to be similar to the 'northern' area for the spelling of other cases of /s/ (i.e. consistently attested with S-signs), is marked apart from the latter (and from the southern texts) by the usage of S-signs (VC and CV) in the representation of the contact between dental phonemes and /š/. This orthographic feature corresponds, as shown in Sommerfeld 2006 (see next section), to a distinctive use of S-signs for /s/ in all word contexts, characteristic of OB texts from the Diyala region.

4.1.3.2 Later studies and revisions devoted to OB texts

The examination of the spelling of OB sibilants in Goetze 1945 and in Goetze 1958 provided a first detailed analysis of OB orthographic and linguistic features related to dialectal variation. Despite quantitative flaws in the methodology and in the representativeness of the samples of study, Goetze's insightful observations helped to explain basic distributional patterns of regional variation. These patterns were subsequently accepted and accounted for in following descriptions of OB archives[547] and were also applied to analyse the geographical origin of OB literary texts[548].

Nevertheless, Farber 1981 and Sommerfeld 1995 changed the standards for analysis of the representation of OB sibilants by adding a new paradigm of variation, i.e. the allophonic variants of /s/ associated to the distribution of S-signs and Z-signs[549]. The interaction between this pattern of variation, internal to the phonological system of OB lects, and the external distribution of spellings allegedly associated to sociolinguistic variables (regional dialectal differences) has inevitably challenged some of the conclusions arrived at in Goetze 1958.

4.1.3.2.1 Westenholz 2006: 'Do not trust the Assyriologists!'

Westenholz´s article 'Do not trust the Assyriologists!'[550], already mentioned in 4.1.2 regarding the diachronic evolution of /s/ in OB texts, is a lucid paper that presents a series of general remarks about language, transliteration and transcription in Old Babylonian. As an example of the frequent overlook of the linguistic hints offered by idiosyncratic orthographic traits, Westenholz (2006) also addresses directly some aspects about the orthographic rendering of sibilants in OB, and provides an appendix illustrating the main results of his research on orthographic representation of /s/ in seven different situations[551]:

[546] Labelled 'Eshnunna' in Goetze's chart (Goetze 1958, 138).
[547] See Walters 1970, xxi.
[548] Westenholz, J. 1997, Izre'el and Cohen 2004 (See, however, the remarks to both in Kogan and Loesov 2005).
[549] As mentioned before, the pattern had already been detected in Goetze 1937 and Goetze 1958 for the Code of Hammurabi and the letters sent by Samsi-Adad, but it is in Sommerfeld 1995 that the possibility is opened for the pattern to apply to a larger array of OB texts, regulated perhaps by regional or textual differences.
[550] Westenholz 2006.
[551] Ibid., 58-60.

(1) ‘dental + *-š* of suffix written Z or ZZ’; (2) ‘*s*, *ṣ*, *z* + *-š* of suffix written Z or ZZ’; (3) *š* + *-š* of suffix written S; (4) ‘initial *s* written Z’; (5) ‘single intervocalic *s* written S’; (6) ‘syllable-final *s* written ÁŠ, IZ, UŠ in the north, corresponding to SA, SI’ and (7) ‘Double intervocalic *s*, or *s* + *-ta*, written Z or ZZ’. The data comes from an unspecified corpus of texts from ‘Babylonia proper’[552]. The chronological frame of the texts is announced to encompass only a limited time span that includes the reigns of Sin-muballiṭ, Hammurabi, Samsu-iluna and Rim-Sin[553]. However, a number of examples provided within the so-called ‘inconvenient dated evidence’ include late OB instances dated to the reigns of Ammi-ditana, Ammi-ṣaduqa or Samsu-ditana[554]. Royal inscriptions (including the prologue and the epilogue of the Code of Hammurabi), as well as literary and scholarly texts were not considered. Furthermore, all occurrences of signs SU and ZU[555], as well as personal names were also discarded in the study. The evidence for each study case is illustrated by some examples of positives instances found in the record[556], but attention is also paid to show the cases where exceptions to the statements (1) to (7) appear in the data[557].

The first important conclusion regarding sibilants in Westenholz 2006, is a correction on Goetze’s assumption that the product of final /š/ of the root + *šu* (pronominal suffix) is written with the sign ZU in the North. According to Westenholz, this conclusion is based on unreliable copies and misreadings[558]. By contrast, the consistent pattern in Old Babylonian texts appears to be one in which final /š/ of a lexeme’s root + *šu* yields [ss], written with S-signs.

A further observation, missing in Goetze’s articles, is that the result of the contact between the same series of pronominal suffixes (with an initial /š/) and root-final sibilant phoneme /š/ differs from that of other root-final sibilants: ‘s, ṣ and z’[559]. According to Westenholz, this situation, unlike the cases of /š/+/š/ contact, follows the alternative pattern found in the contact between dental plus suffixes, i.e., it yields an affricate phoneme, [tss], and is

[552] Ibid., 258. Like the present study, Westenholz’s survey leaves out the contemporary texts from areas such as Mari or Susa. However, the Diyala region, included in our research, is also excluded in Westenholz 2006.
[553] ‘Only texts that could be dated securely to the century covered by the reigns of Sîn-muballiṭ (Sm), Hammurabi (Ha, including the legal parts of Codex Hammurabi), and Samsu-iluna (Si), or Rim-Sîn (RiSi) of Larsa, have been considered.’ (Westenholz 2006, 258).
[554] See, e.g., VAS 7, 83; JCS 11, 91 or YOS 13, 7.
[555] Justified by the idea that ‘Since the ancient scribes, or quite often the modern copysts and editors of the texts, do not distinguish adequately between the very similar signs SU and ZU’ (Westenholz 2006, 258).
[556] Sometimes complemented by comments such as ‘(very) many examples’.
[557] Since the exceptions from the so-called ‘Inconvenient dated evidence’ include also late OB instances, allegedly not part of the surveyed selection of texts, it is not clear whether the counterexamples stem partly from sources outside the corpus. On the other hand, all the examples given in the study are accompanied by the sources, but the lack of a complete list of the texts analysed in the research prevents the replication of the results.
[558] Westenholz 2006, 253, note 4.
[559] Westenholz 2006, 253.

accordingly rendered by Z-signs[560]. The same conclusions are independently reached by Streck (2006)[561].

Finally, the reach of applicability of the allophonic pattern of variation described in Sommerfeld [1995], by which /s/ in word-initial position or when doubled occurs as an affricate and is spelled with Z-signs to differentiate it from the fricative allophones in other phonetic contexts (henceforth called the 'allophonic pattern'), is also examined by Westenholz (2006), who concludes:

> This pattern is consistently applied in some texts but not in others. […] There are many exceptions to this rule; but unfortunately, most of them are difficult to date. Some of them are demonstrably late Old Babylonian. (Westenholz 2006, 253).

Nonetheless, despite the small amount of 'inconvenient date evidence' that disagrees with the pattern (five instances in (4), three in (5) and five in (7)), positive examples, i.e. occurrences of the expected Z- or S-signs according to the internal allophonic restraints, are in all three cases (vaguely) quantified as including 'many examples'.

4.1.3.2.2 Streck 2006: 'Sibilants in the Old Babylonian texts of Hammurapi and of the governors in Qaṭṭunan'

The collection of papers edited by Deutscher and Kouwenberg 'The Akkadian Language in its Semitic Context'[562], which included Westenholz's article 'Do not trust the Assyriologists!', contains a parallel study on OB sibilants written by M. Streck: 'Sibilants in the Old Babylonian texts of Hammurapi and of the governors in Qattunan'[563]. Streck 2006 is a thorough analysis of the orthographic and linguistic characteristics of OB sibilants within a well-defined corpus of texts and with a fully comprehensive inventory of occurrences, some of them collated personally by the author, which represents the most conclusive analysis of sibilants for the corpus of OB texts included in the study. As the title indicates, the research focuses on a specific collection of roughly contemporary documents consisting of: the OB letters from King Hammurabi, the Code of Hammurabi, royal inscriptions of Hammurabi collected in RIME 4, and the letters of the governors of Qaṭṭunan edited in ARM 27[564]. Therefore, the study constitutes an authoritative account of the synchronic variation in the representation of sibilants in epistolary and official texts produced by the royal administration of Hammurabi, and of the letters written in the peripheral region of Qaṭṭunan; but it does not attempt to portray the orthographic and

[560] Westenholz 2006, 253. It should be noticed that Westenholz assumes this feature to be 'fairly consistent in **all** Old Babylonian texts' (Westenholz 2006, 353) [Emphasis added]. It is probably to be understood that the statement refers to the all the OB texts examined in the paper, which exclude, for example, OB texts from the Diyala region. To this respect, it shoud be reminded that Goetze (1958) already shows that the contact between dental + /š/ from suffixes yields orthographies employing S-signs in texts from Ešnunna (Goetze 1958, 138).

[561] See Streck 2006, 231-232 for the combination between *s, ṣ* or *z* + *š*. For the combination /š/+/š/, however, Streck's analysis returns two types of results: spellings with Z-signs and spellings with S-signs. For a further discussion of this point see section 4.1.3.2.2, below.

[562] Deutscher and Kouwenberg 2006.

[563] Streck 2006.

[564] Ibid., 215. The collection of texts is conceived as 'a relatively uniform corpus dating to the middle part of the Old Babylonian Period' (Streck 2006, 215).

linguistic variability that existed in OB, most characterised by the spelling practices proper to non-official documents and to geographically differentiated lectal areas[565].

Some of the observations made by Streck (2006) will be further commented on in the analysis of the corpus of letters (ACCOB) in section 4.2. Regarding Streck's assessment of previous observations about OB sibilants mentioned thus far in the present work, the analysis presented in Streck 2006 shows a 'relatively clear distribution of Z- and S-signs for /s/'[566] that supports the affricate hypothesis[567]. No apparent significant lectal distinction between the different collections of texts that make up the corpus of the study is made explicit.

Exceptions to the most frequent pattern of representation of /s/ occur with a different degree of significance according to the internal position of the phoneme, and are occasionally tentatively explained by means of language internal phonetic or phonological developments[568]. However, for most cases of 'exceptional' instances of S-signs in initial position, a lexically-grounded pronunciation difference for certain lexemes is assumed, justified by the Sumerian or Amorite origin of the lexemes[569]. Unlike other descriptions of the allophonic pattern such as Sommerfeld 1995 and Westenholz 2006, Streck 2006 analyses separately Z- or S-signs 'for /s/ in syllable initial position after a consonant' (e.g. *pu-ur*-SA-*a-ma*), and 'after a vowel' (e.g. *ip-ru*-SU)[570]. Both cases behave in a similar way and are said to be written with both Z- and S-signs[571], but a clear (internally motivated) distribution is not found, so the author concludes:

> '/s/ is syllable initial position after a vowel is more often than no deaffricate, and that the texts in our corpus reflect a transitional stage between older Akkadian, in which /s/ was always affricated in that position, and later Akkadian, in which /s/ was always deaffricate' […] [for /s/ in the same position after a consonant] 'again it is not possible to detect any clear pattern of distribution' (Streck 2006, 225)

It should be noticed, however, that in the case of not initial /s/ after a consonant, the cases of Z-spellings listed in Streck 2006 consist of merely three forms: one is written with the sign SA_6 and belongs to a royal inscription (*ip-pa-al*-SA_6-*ni*, RIME 4, 339:9); a second one, from a royal letter, is a difficult reading: *ka-am*-Z[U]-*ú* (AbB 2, 59:8[572]); and the last one, *ip-pa-al*-ZA-*am*, an instance repeated more than ten times in the corpus of letters from Hammurabi, is in fact part of the spelling of two personal names (*Ì-lí-ip-pa-al-sà-am* and EN.ZU-*ip-pa-al-sà-am*) which, as personal names, are forms generally considered apt to use archaizing spellings[573]. These caveats were probably accounted for by the author in the short summary of the analysis of the spelling for /s/ presented in Streck 2014[574], where a

[565] Moreover, Streck (2006) dissmisses the emerging picture of the sibilants in Goetze 1958 as 'partly confusing' precisely because 'the article mixes texts from too many different regions and periods within Old Baylonian' (Streck 2006, 2015, note 2).
[566] Streck 2006, 224.
[567] See also Streck 2006, 232.
[568] See, e.g., the possible explanation for the use of single CV signs for expected /ss/ in the Code of Hammurabi in Streck 2006, 225.
[569] Ibid., 224.
[570] I.e., intervocalic. Ibid., 220.
[571] The intervocalic /s/, however, is described as occurring 'more frequently with S-signs' than Z-signs (Streck 2006, 221).
[572] The copy in LIH 11, 73 makes it difficult to determine whether the original sign was ZU or SU.
[573] Westenholz 2006, 258. Notice that the same argument, the possibility of mixing archaisms and innovations, is used in Streck 2006 to reject the analysis of literary texts in his paper.
[574] Streck 2014, 24-26.

distinction is made between single non-initial intervocalic /s/ and single non-initial /s/ following a consonant. The former is given two possible spellings, S- and Z-signs (Streck 2014, 25, §63 c) and d)), which contrast with the single spelling cited for the latter: only S-signs (Streck 2014, 25, §63 e)).

The representation of long /ss/ in the corpus presents no exceptions, and is rendered, as expected from the allophonic pattern, by Z-signs.

For the instances of phonetic contact /*s*/ + /*š*/, /*z*/ + /*š*/ and /*ṣ*/ + /*š*/[575], also discussed by Westenholz (2006), the observations in Streck 2006 reflect an analogously consistent use of Z-signs in CV syllabograms. By contrast, the combination of /š/ from a lexeme plus /š/ from an adjunct pronominal suffix has in Streck 2006 a nuanced distinction from Westenholz's view[576]. As was pointed above, Goetze (1958) had first argued that the phonetic contact in question results in different spellings according to the regional (North-South) origin of the texts: Z-signs characterising northern documents and S-signs being proper to southern areas. This is contradicted by Westenholz (2006), who observes a consistent use of S-signs in all his data[577]. Streck (2006), however, concludes:

> There is not a clear distribution of Z- or S-spellings. Both types occur together in CH and are variants in one Hammurabi inscription in RIME 4. (Streck 2006, 240)[578].

The examples for both spellings in Streck's data are nevertheless scarce[579], with only one case of CV sign of the Z-series displayed: *e-pu-uš*-ZU-*um*, which is, in turn, a variant form of the instance *e-pu-uš*-SU-*um*, both from a royal inscription[580]. In Streck 2014, however, a clarification on the regularity of the spelling of both variants is made:

> '/š/ in Kontakt mit anlautendem /š/ der Pronominalsuffixe wird meist S, seltener Z geschrieben' (Streck 2014, 26).

Finally, an additional combination of phonemes is analysed in Streck 2006: /š+s/, 'probably always spelled with S-signs'[581].

4.1.3.2.3 Sommerfeld 2006: Varianten in der Keilschrift-Orthographie und die historische Phonologie des Akkadischen

While Streck's study of sibilants analyses the orthographic patterns for the representation of sibilants in a restricted corpus of synchronic texts (which includes the Code of

[575] Sic. Ibid., 230-231.
[576] Streck (2006) notices that 'two /š/ phonemes occurring as radicals [always spelled Š, such as Gt preterite form *iptaššu*] behave differently than /š/ in the last radical position and /š/ as first consonant of a pronominal suffix'. (Streck 2006, 240).
[577] See however Kogan and Markina 2006, 570.
[578] For a critical account of different spellings of sibilants in the text of the Code of Hammurabi (Louvre's stele) see Sommerfeld 2006 and Hernáiz (in press).
[579] A total of nine occurrences, but more cases are referred to be found in Goetze 1958.
[580] RIME 4, 349. It should be noticed, however, that another occurrence from the Code of Hammurabi, which is not shown in the data, is however mentioned and accounted for in the following analysis: 'Both types [Z- and S-spellings] occur together in CH' (Streck 2006, 240). Streck probably refers to *er-re-sà* (CH xv, r.7) which appears in fact as the only exception in Westenholz's account, and is also shown in Streck 2014, 26. It should be also noticed that Streck does not include the CVC sign ZUM (in *e-pu-uš*-ZUM) into the instances of Z-signs (since SUM is not used for [sum] in OB).
[581] Streck 2006, 240.

Hammurabi) that is considered a 'relatively uniform corpus'[582], Sommerfeld (2006) focuses attention precisely onto the many types of variation found within the text of the Code of Hammurabi, including a section dedicated to the representation of sibilants ('Teilassimilation von Sibilanten'[583]). Furthermore, Sommerfeld 2006 establishes a dialectal contrast between (nearly-)synchronic OB texts, by comparing the representation of sibilants in the Code of Hammurabi, as model of the distribution of the allophone pattern[584], and sibilants from a corpus of about 100 letters and 450 documents from an archive in the Diyala region ('Dialektunterschiede'[585]). According to Sommerfeld (2006), the main characteristic of these texts is that:

> Anders als im KH ist die Deaffrizierung der Sibilanten im Dijala-Gebiet insgesamt bereits weit fortgeschritten; damit wird der Zustand antizipiert, der sich mittelbabylonisch dann in ganz Babylonien durchgesetzt hat. (Sommerfeld 2006, 371-372).

Therefore, /s/ is consistently rendered in the data from the Diyala by S-signs, irrespective of its position as word-initial, intervocalic or doubled, with only few exceptional Z-spellings[586]. This characteristic use of S-signs, allegedly due to a widespread fricative pronunciation of the phoneme /s/, encompasses also the phonemes resulting from contact between dental and sibilant radical consonants (including /š/) and the onset /š/ from pronominal suffixes[587].

Sommerfeld's paper confirms, therefore, that the operating variables responsible for the different spellings of /s/ in OB are twofold; on the one hand, an allophonic differentiation exists in certain systems by which Z-signs or S-signs alternate responding to language internal conditionants such as consonantal length and word-initial or intervocalic position of the phoneme. But on the other hand, the OB period witnesses a change in progress in which this allophonic distribution is further conditioned by lectal variables, as suggested by the dialectal traits present in texts from the Diyala region. The close connection between orthographic patterns and linguistic forms is suggested by the systematicity on the alternation of graphemes in particular morpho-phonological contexts of a varied array of texts, which resembles the allophonic variation typical of the oral language. The distinctive degree in which texts from different regions attest this allophonic variation, therefore, can be argued to respond to different steps in the diffusion of the same phonologically-based parameters, always within the natural margins and restrictions that a written code imposes with respect to an oral code.

In the next section, the diffusion of the different representations of the phoneme /s/ will be analysed on the texts from the ACCOB corpus.

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[582] Ibid., 215. Although the corpus of texts in Streck 2006 is uniform from a diachronic point of view, it is not representative of potential synchronic regional variation (see Kogan and Markina 2006, 579, note 29). On the other hand, since fundamentally different types of texts, such as royal inscriptions and letters, are equated in one single general analysis, it could be argued that the collection of texts in Streck 2006 lacks diastratic uniformity.

[583] Sommerfeld 2006, 367. Data from OB letters in AbB 1-13 are also presented for the study of VC sibilants AŠ and ÁŠ.

[584] As described in Sommerfeld 1995, 35-36 (GAG^3, §30) and further in Sommerfeld 2006, 367 ff.

[585] Sommerfeld 2006, 371 ff.

[586] Only three instances of Z-signs are presented in Sommerfeld 2006, 372.

[587] Ibid., 373. It should be pointed out that the use of S-signs for /s/ in all these situations was already noted in Goetze 1958, 138 (see signs in the column called 'Eshnunna'). However, no textual justification or further development of this difference appears articulated in the article.

4.2 The distribution of CV syllabograms to represent /s/ in OB letters.

The present analysis of the different renderings of /s/ in the large sample of OB letters collected in the Annotated Corpus of Correspondence in Old Babylonian (ACCOB) aims at integrating a rigorous account of occurrences of variable spellings (as in Streck 2006), with a wider perspective that encompasses and addresses lectal variation (as Goetze 1945 and 1958, and Westenholz 2006). Moreover, as well as accounting for qualitative traits[588], emphasis is given to assessing the quantitative magnitude of the results from the queries on the corpus[589].

The null hypothesis against which the data from the corpus will be contrasted is that /s/ is rendered by Z-signs and S-signs following the distribution explained in Sommerfeld 1995 and 2006, referred here as the 'allophonic pattern'. Only four distinctions for this distribution of signs for /s/ will be considered in this section, all of them referring to phonemes rendered by CV signs: (1) /s/ in word-initial position (for which the default spelling is the use of CV signs of the Z-series); (2) long geminated /s/ (Z-signs)[590]; (3) non-initial short /s/ (S-signs)[591]; and (4) /s/ resulting from coalescence in the contact between a dental(-alveolar) or a sibilant (other than /š/) and the initial consonant /š/ from a pronominal suffix (expected to be rendered by Z-signs). The case of contact between radical /š/ and /š/ from pronominal suffixes will be analysed separately in section in 4.3.

The terminology of the study includes expressions such as 'variable (s,z)' or 'variable (sa,sà)'. These will be employed to refer to the two dichotomic variant spellings for /s/, e.g., the different rendering of /sa/ by *sa* (sign SA) or *sà* (sign ZA). In the case of the general 'variable (s,z)', the reference includes the whole two sets of spellings: CV signs of the S-series and Z-series[592]. Furthermore, since it seems that all or most sub-divisions of texts in ACCOB present an allophonic representation for the phoneme under study in this section, for the sake of convenience the reference to this phoneme in all cases will be '/s/', even if in some subdivisions of the corpus the most prevalent allophone could be the affricate counterpart /t͡s/.

It has been already shown that the distribution of the allophonic pattern is occasionally confronted by written evidence from OB texts: 'this [allophonic] pattern is consistently applied in some texts but not in others' (Westenholz 2006, 253 and 254). It has been separately argued that geographical variables operate as a source of variation (Goetze 1945 and 1958), and that chronological factors also influence the different spellings observed in the written record, arguably due to a parallel process of phonological change in OB. In this

[588] It is reminded here that epigraphic and other material information, undoubtedly valuable for the research on variation, is, however, not included in the present study.
[589] To this respect, Kogan and Loesov (2005) point out: 'before massive investigations of this kind are carried out every conclusion about the areal background of the /c/-/s/ alternation will be inevitable premature' (Kogan and Loesov 2005, 748).
[590] For the case of doubled /s/, we will not differentiate between geminated forms resulting from paradigm patterns (e.g., doubled second radical consonant in verbal forms like present) and others cases of doubling such as the result of contact between /n/ and /s/ (e.g. in forms of the predicate *nasāhum*).
[591] Streck (2006) makes a distinction within the group of non-initial short /s/ and analyses separatedly those that occur in intervocalic position and those which occur after a consonant. In the present study, both cases will be analysed as a single variable. See section 4.2.2.4 for an assessment of their spelling differences in OB letters.
[592] See a similar method of analysis of /s/ in the Code of Hammurabi and synchronically related texts in Hernáiz (in press).

sense, the OB period is 'a transitory phase'[593] towards a subsequent levelled stage where /s/ is regularly written with S-signs and probably pronounced as a fricative sibilant.

Nevertheless, previous studies on the subject have been based on collections of OB documents belonging to different genres. The corpus of the present analysis, however, was built seeking textual uniformity. Therefore, it consists exclusively of texts of the epistolary genre, believed to represent more closely the variation and nuances of the oral language. Once the potential variability caused by diastratic dissimilarity is minimized, the corpus combines different periods and regions to query for other two types of variation: synchronic and diachronic. The lack of geographic diversity had been remarked for previous surveys:

> 'Goetze's evidence and conclusions have been seriously criticised in such recent studies as Streck 2006:2013[594] and Westenholz 2006:253. This criticism (notably, a few factual corrections of Goetze's examples) appears to be essentially justified although it may be observed that neither Streck nor Westenholz provide much evidence from those OB corpora which played the most crucial role in Goetze's contribution (Larsa, Uruk, Ur; Sippar, Dilbat; Susa).' (Kogan and Markina 2006, 569, note 29).

The corpus is, nonetheless, unbalanced. The type of texts most represented in ACCOB are letters from the middle OB period and the northern region. However, there is a substantial number of letters related to other areas and chronologies that provide an exploratory insight into the subject of variation in OB letters. The data in the survey correspond to the editions of the texts specified in the annexe, unless otherwise is indicated[595]. Instances of a CV sign that are completely reconstructed in the editions (conventionally transliterated between square brackets) are not considered. Instances not completely reconstructed but taken from semi-broken contexts or of uncertain readings are occasionally included in the survey. Those that are, however, excluded will be indicated in footnotes.

4.2.1 Diyala region

4.2.1.1 Early OB texts

The early letters from the Diyala region in ACCOB come from the archive of Ešnunna, and were published in Whiting 1987, the edition that will be followed in the study (unless otherwise indicated).

Not many examples of CV graphemes rendering /s/ occur in the relatively small sub-corpus of early OB letters from the Diyala, and unfortunately the documents are often fragmentary. This implies that a substantial number of the instances of this group are uncertain. These circumstances prevent a conclusive assessment of the orthography and phonological representation of /s/ in early OB Diyala texts.

[593] Westenholz 2006, 253.
[594] Sic. The reference is a mistake for 'Streck 2006, 215'.
[595] One of the main obstacles for gaining a complete view of the dialectal distribution proposed in Goetze 1958 is that, unlike the clear compostion of the corpus analysed in Goetze 1945, Goetze 1958 consists of a large number of examples from an undetermined number of sources. It is, therefore, not possible to establish the extent of potential counterexamples in the replication of the data.

The best part of the data available (see Table 37, below) can be interpreted as a system that follows the model of the allophonic pattern: Z-sign in initial position and in long consonant (either from germination or as result from the contact between dental or sibilant and pronominal suffixes), and S-signs elsewhere[596]:

Table 37: Instances of /s/ in the early OB texts from the Diyala that are congruent with the 'allophonic pattern'[597].

1	Z-sign	*sà-mu-kà-ni*	AS 22, 9:13
2	Z-sign	*ku-sí-kà*	AS 22, 31:10
3	Z-sign	*i-ša-sí-k*[um](?)	AS 22, 49:2'
4	Z-sign	*ta-˹ta*(?)˺*-sà-ah*[598]	AS 22, 25:11
5	Z-sign	ÌR-*sú*	AS 22, 48:11
6	Z-sign	*a-wa-at-sú-nu*[599]	AS 22, 45:12
7	S-sign	*˹ta-ra-ka-su˺*	AS 22, 45:3

Like the occurrence number five in the table, the fragmentary text AS 22, 14 seems to contain Z-signs representing what could be the result of a contact between a radical consonant of a lexeme and a possessive pronominal suffix: [...]-*as-sú-nu* (AS 22, 14:6'); [...]-*sú-nu* (AS 22, 14:3') and (AS 22, 14:8'), but the interpretation remains uncertain.

The presence of only one case of /s/ written with a S-sign (number 7) in an uncertain reading from a letter that lacks other archaic orthographic features frequent in earlier texts from Ešnunna[600], cannot provide reliable evidence to determine whether (1) the allophonic pattern was operational in these texts, or (2) Z-signs where used for |s*| in all positions (motivated by an affricate articulation of /s/), as it is the case for Old Akkadian documents[601].

Additionally, in AS 22, 40:5' there is one exceptional spelling of a phoneme /s/ in the initial consonant of the predicate *sekērum* 'to block' that is not rendered by a Z-sign but by the grapheme ZÍ: *se$_{20}$-ek-ra-at*.

The picture obtained from the data in AS 22 can be modified substantially if the letter AbB 9, 184, published by Simmons (1960) in 'Early Old Babylonian Tablets from Ḫarmal and Elsewhere'[602] is to be included in the group of texts under discussion. In this letter, we find an early instance of a S-spelling congruent with the allophonic pattern in *mu-pa-li-s*[a]-*am* (AbB 9, 184:17). Moreover, the form *ṣí-bu-su* (AbB 9, 184:15), formed by the incorporation of the suffix *-šu* to the lexeme *ṣibûtum*, represents an adaptation of the pattern towards the trend of rendering /s/ with S-signs in all instances, proper of later stages of

[596] It should be remembered that the instances of sibilants resulting from the contact between radical /š/ and adjunct suffixes, as well as the contact between /š/ and /s/ are not included in this section.
[597] Other uncertain occurrence is […-s]*ú-úh*, probably a form of the predicate *nasāhum* 'to tear out' (see Whiting 1987, 157).
[598] According to Whiting 1987, this is a Gtn pret. form of the predicate *nasāhum* 'to tear out', which implies, if the reading is correct, a long (i.e. doubled) consonant /s/.
[599] Notice the unusual form *a-wa-at-sú-nu* where the dental consonant of the root (/t/) is conserved in the spelling before the Z-sign of the modified onset consonant of the pronominal suffix *-šunu*.
[600] See the orthographic comparison of *ka, di* and other dating criteria in Whiting 1987, 35.
[601] A posible exception occurs at the beginning of AS 22, 50: *˹si-ki˺*-[...] (AS 22, 50:1). It is, however, a fragmentary, not contextualized form that might, in fact, belong to a document that is not a letter (Whiting 1987, 106).
[602] Simmons 1960 [JCS 14], 55.

Akkadian. The letter, however, cannot be dated with certainty and might, in fact, belong to a later period[603].

4.2.1.2 Texts after the early OB period

The analysis of OB letters and documents from the Diyala region in Sommerfeld 2006, and the earlier observations in Goetze 1958 (see 4.1.3.2.3), provide a contrast with the orthography of /s/ attested in early OB letters from Ešnunna. Furthermore, the innovative use of S-signs in contexts where /s/ is generally rendered by Z-signs differs to (nearly) contemporary OB texts such as the Code of Hammurabi.

The results of the assessment about the representation of /s/ in the corpus of correspondence related to the Diyala region in ACCOB present a distribution of signs that remains similar to that observed by Sommerfeld (2006):

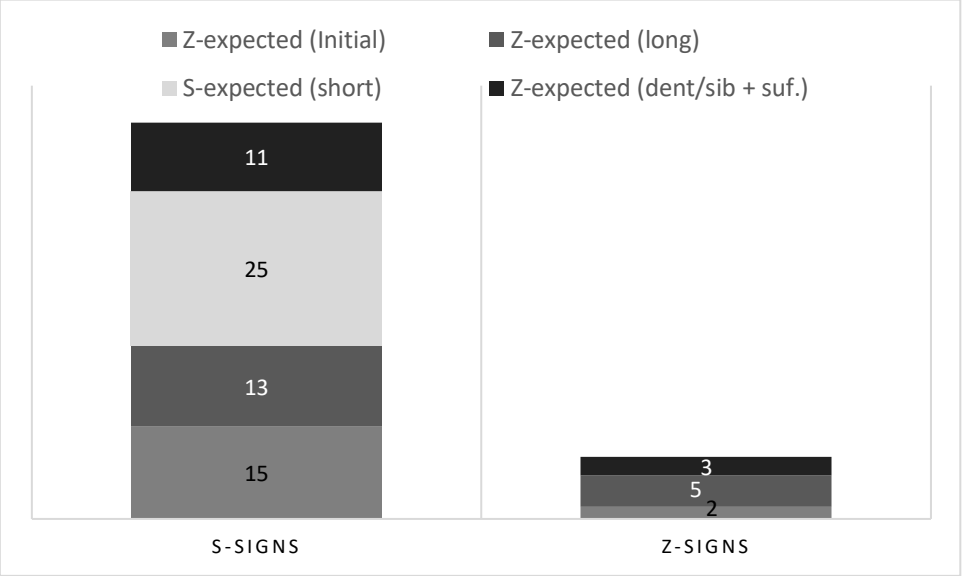

Figure 26: Instances of CV signs for /s/ in (non-early) OB texts related to the Diyala region in ACCOB.

Figure 26 shows a clear prevalence of CV syllabograms of the S-series for the rendering of /s/[604] in all of the four scenarios examined: initial, long[605], (non-initial) short[606] and the result of contact between dental or sibilants with pronominal suffixes[607]. The use of S-signs

[603] In Simmons 1959, 71, the letter is included within the group of texts that cannot be related to the archives studied. Leemans (1960) suggests that the letter might be from the time Hammurabi or before (Leemans 1960, 182). The two instances of this document are tentatively included in the group of 'non-early' OB letters of the next section.

[604] Many of the instances of S-signs in Figure 26 come from the text Fs. Garelli p. 147-159. In that edition, however, all the signs SU appear instead transliterated as ZU. In the present study, we have used the revised transliterations offered in the website Archibab, which appear to reflect more adequately the signs of the copy: http://www.archibab.fr/4DCGI/listestextes7.htm?WebUniqueID=1527884 [accessed 01.07.2017].

[605] The reading of the form [a]s?-*sa-ba-at* (Sumer 13, 109:43) is uncertain and has not been including in the data displayed.
Notice also the proposed reading of the sign ZÍ as se_{20} in the form se_{20}-*ek-ra-at* in AS 22, 40:5'.

[606] One of the instances gathered is the graph as a S-sign for a short intervocalic /s/ is *šu-ku-si* (AbB 8, 7:8). It should be noticed, though, that it is not entirely clear whether the corresponding lexeme should be referred to as *šukusum* or *šukussum* (see the entry for the term in the AHw and CAD dictionaries).

[607] It should be noticed that one of the instances included here: *a-ha-ar-ru-us*$_4$*-su* (Fs. Garelli p. 147-159: ii,10), is assumed to be a form of the predicate *harāṣum* 'break off, deduct', but might correspond instead to

is, therefore, the most regular variant in these texts. Table 38, below, lists the occurrences os S-spellings for morpho-phonological environments where the allophonic pattern, largely observed in OB texts like the Code of Hammurabi, would predict the use of CV signs of the Z-series[608].

Table 38: Instances in letters related to the Diyala region from ACCOB, where S-spellings occur in word-initial or doubled /s/.

N.	*Form*	Letter	Sender
1	*a-ha-ar-ru-us₄-su*	Fs Garelli p. 147-159, ii:10	Ibal-pi-El II
2	*ap-qí-ìs-su-um*	Sumer 14, 1:23	Nanna-mansum
3	*ap-qí-ìs-su-um*	Sumer 14, 1:19	Nanna-mansum
4	*a-su-ur-ri*	Sumer 14, 1:41	Nanna-mansum
5	*a-wa-su*	JCS 24, 67:16	Naram-ilishu
6	*ḫu-ús-si-sa-an-ni-i-ma*	Sumer 14, 1:43	Nanna-mansum
7	*ḫu-ús-su-si-ku-nu*	Sumer 14, 1:31	Nanna-mansum
8	*ip-ta-ás-su*	JCS 24, 67:11	Naram-ilišu
9	*i-sa-ap-ḫu*	Sumer 14, 1:42	Nanna-mansum
10	*ʿis-suʾ*-[hu]	Fs Garelli p. 147-159, iii:9	Ibal-pi-El II
11	*li-ha-ás-si-su-ka*	Fs Garelli p. 147-159, iii:16	Ibal-pi-El II
12	*li-ìs-su-ḫu-ú*	Sumer 14, 14:19	Nanna-mansum
13	*li-ìs-su-uq-ma*	Semitica 58, 1:41	Iluni
14	*lu-ús-su-u*[h]	Fs Garelli p. 147-159, i:8	Ibal-pi-El II
15	*ma-a-su*	Fs Garelli p. 147-159, iii:34	Ibal-pi-El II
16	*me-re-su-nu*	JCS 24, 68:15	Nawram-šarur
17	*sa-al-ma-ti-šu*	Sumer 13, 109 [IM 54005]:15	*rubûm*
18	*sa-al-mu*	Sumer 13, 109 [IM 54005]:17	*rubûm*
19	*sa-an-qa-a-ku*	Sumer 14, 7:21	Imgur-Sin
20	*ša-na-ás-su*	Sumer 14 22, 14	Ibal-pi-El II
21	*ṣí-bu-su*	AbB 9, 184:15	Nanna-ibila-mansum
22	*ṣí-di-is-su*	Fs Garelli p. 147-159, i:6	Ibal-pi-El II
23	*si-im-ti*	Sumer 14, 1:11	Nanna-mansum
24	*si-im-tim*	Sumer 14, 1:13	Nanna-mansum
25	*si-im-tim*	Sumer 14, 1:19	Nanna-mansum
26	*si-ma-at*	Sumer 14, 1:17	Nanna-mansum
27	*si-ma-at*	Sumer 14, 1:24	Nanna-mansum
28	*si-ma-at*	Sumer 14, 1:25	Nanna-mansum

harāšum: '[D. Charpin]. a compris la forme *aharrussu* comme venant de *harâṣum*, « retrancher », tout en remarquant qu'il s'agissait d'un verbe de la classe à alternance (a/u). Je préférerais y retrouver le verbe *harâšum*, pour lequel G. D. avait proposé le sens d'« être muet » mais auquel le sens d'« attacher »' (I. Arkhipov, Archibab website: http://www.archibab.fr/4DCGI/listestextes7.htm?WebUniqueID=3155703 [accessed 01.07.2017]).

The form *wa-ar-ka*(!)-*as-sí*(!)-*na* (JCS 24, 63:6') has not been considered in the data due to the problematic reading of the penultimate sign.

[608] I.e., in word-initial position and doubled (either geminated or the product of coalescence between radical dental/sibilant consonants and /š/ from a pronominal suffix).

29	*si-si-ik-ti*[609]	Fs Garelli p. 147-159, iii:33	Ibal-pi-El II
30	*si-si-ik-ti*	Fs Garelli p. 147-159, iii:35	Ibal-pi-El II
31	*su-lu-uh*	OBTIV 15:12	Ahat-waqrat
32	*su-lu-up-pí-ka*	Sumer 14, 12:8	Imgur-Sin
33	*Su-ti-a-am-ma*	Fs Garelli p. 147-159, iv:15'	Ibal-pi-El II
34	*Su-ti-i*(meš)	Semitica 58 4 [PM 205-bis], 5	Iluni
35	*ṭú-ru-su*	Sumer 14, 8:18	Imgur-Sin
36	*ú-ša-am-qa-su-ma*	Fs Garelli p. 147-159, ii:11	Ibal-pi-El II
37	*ús-sa-an-ni-qú-nim*	Sumer 14, 1:29	Nanna-mansum

The few exceptions in the letters from the Diyala region that are attested in the corpus written with Z-spellings in CV signs are listed below:

Table 39: Instances of the variable (s,z) written with CV Z-signs in (non-early) OB letters related to the Diyala area in ACCOB.

N.	Form	Letter	Sender
1	*sí-la-tu-ka*[610]	Sumer 14, 12:9	Imgur-Sin
2	*sú-ʾqíʾ-im*	OBTIV 15:4	Ahat-waqrat
3	[á]*s-sú-uh-ma*	AbB 8, 7:12	Abizum
4	*pu-ru-ús-sà-am*	JCS 24, 63:15'	Sanniqum
5	*ʾnaʾ-sú-hu-ma*	Semitica 58, 5:5	Tabtamnu
6	*ta-ah-ta-na-sà-ás*[611]	AbB 8, 5:7	Nanna-mansum
7	*ṣú-ba-sà*	AbB 1, 130:32	Lu-Dingirmah
8	*be-lu-sú*	OBTIV 14:12	Sin-eribam
9	*ú-ša-am-ri-is-ʾsú-nuʾ-ši-im*	OBTIV 23:11	Unknown
10	*li-iš-ta-sí-qú*	JCS 24, 68:10	Nawram-šarur

It should be stressed that the occurrences of Z-signs in Table 39 belong to the letters of individuals that, when other occurrences of /s/ are attested in their correspondence, employ S-signs elsewhere (cf. instance number 6 in the table with the rest of the letters sent by

[609] Instances n. 29 and 30 represent the form *sissiktum* 'hem, fringe', and therefore include each two S-signs (for word-initial and doubled /s/) that the allophonic pattern would render by Z-signs.
[610] The first instance in the table is translated as 'your obstinacy' by Goetze in Sumer 14 (Goetze 1958b, 31), as a form of *silātum* (a term that is normally referred to ***šillatum*** in Akkadian dictionaries such as CAD). Moreover, the form is interpreted in a different way by M. Béranger in the edition of the text in the website Archibab: *ṣí-la-tu-ka* (http://www.archibab.fr/4DCGI/listestextes3.htm?WebUniqueID=3215367 [accessed 01.07.2017]). It should be noticed that the same sender employs S-signs for all other instances of /s/, such as in the form *ṭú-ru-su* (*ṭurud+šu*) (Sumer 14, 8:18), or even in a similar word-initial consonant: *sa-an-qa-a-ku* (Sumer 14, 7:21).
[611] Cagni [1980] notes: 'Auf dem Original scheinen die letzten 3 Zeichen getilgt zu sein' (Cagni 1980 [AbB 8], 4 note 5b).

Nanna-mansum, in Sumer 14[612]). Therefore, no clear individual differences can be attested for the variable.

The spellings listed above do not include any Z-signs for non-initial short /s/, expected to be written with S-signs according to the allophonic pattern[613].

It is also noteworthy to highlight that the spelling of other (VC) signs denoting sibilants in the vicinity of Z-spellings for CV signs in the letters related to the Diyala region (see instances 3, 4 and 6 in the table) differ from similar contemporary orthographies found in other areas; here we observe the alternation of Z-signs of the CV type (*sà*) with VC graphemes such as ÁŠ (*ás*) and UŠ (*ús*), which belong to the group of S-signs: e.g., *pu-ru*-UŠ-ZA-*am* (see Sommerfeld 2006, 367 ff.).

In sum, it can be argued that despite the small sample of data for the variable (s,z) in early OB texts from the Diyala region, the attested instances show a significant difference with respect to later spellings, suggesting an orthographic replacement of Z-signs for S-signs in CV syllabograms. As will be shown next, the replacement of Z-signs in onset /s/ from word-initial syllables and in long /s/ (both from germination or contact coalescence) is not so clearly attested in the OB letters from other areas until a later stage.

4.2.2 North

A second conventional subdivision of OB letters in the corpus corresponds to a varied body of texts that have in common the characteristic of not belonging to the group of letters related to the South or to the Diyala region. It encompasses, therefore, letters that have been associated to the designated area that stretches from the northern site of Sippar to the sites of Kiš and Dilbat in the closest area to southern Mesopotamia. Unlike the other two groups, the northern correspondence in ACCOB is represented by texts that spread chronologically from early texts dating to the reigns of Sumu-la-El (early XIX century BCE) to late letters from the time of Samsu-ditana (end of the XVII century BCE). However, the amount of written evidence for each period varies considerably, with texts contemporary to the reigns of Hammurabi and his son, Samsu-iluna, being overrepresented in the sample, and letters preceding the reign of Sin-muballiṭ of Babylon being represented almost exclusively by a small number of letters from the archive of Ikun-piša in Sippar-Ammanum. Moreover, a large part of the documents in the northern-related list of OB letters are not dated with certainty.

Bearing in mind the considerable diversity that exists within the group of northern-related letters in ACCOB, it is worth noting that a first glance at unrefined data regarding the variable (s,z) finds substantial differences compared to the data shown in 4.2.1 for the Diyala documents. Figure 27, below, shows how the net number of S-sings and Z-signs in the letters related to the North is clearly more balanced than that of Figure 26, from the Diyala region. However, it is necessary to recall that the data from the northern group does not only consist of a larger number of tokens, but also comprises a more diverse number of

[612] It is assumed that the sender Nanna-mansum of AbB 8, 5, and the individual called Nanna-mansum from Sumer 14 are the same individual: the administrator of the city of Šaduppum (Goetze 1958b, 7). However, only the former letter appears to stem from the so-called archive of Kititum.

[613] However, there is one posible exception not included in the list because of its uncertain reading: *li*-<iš>-*ʿter-sàˀ-a-kum* (Semitica 58, 1:43).

archives and a longer attested time span. These circumstances will be examined in the following sections[614].

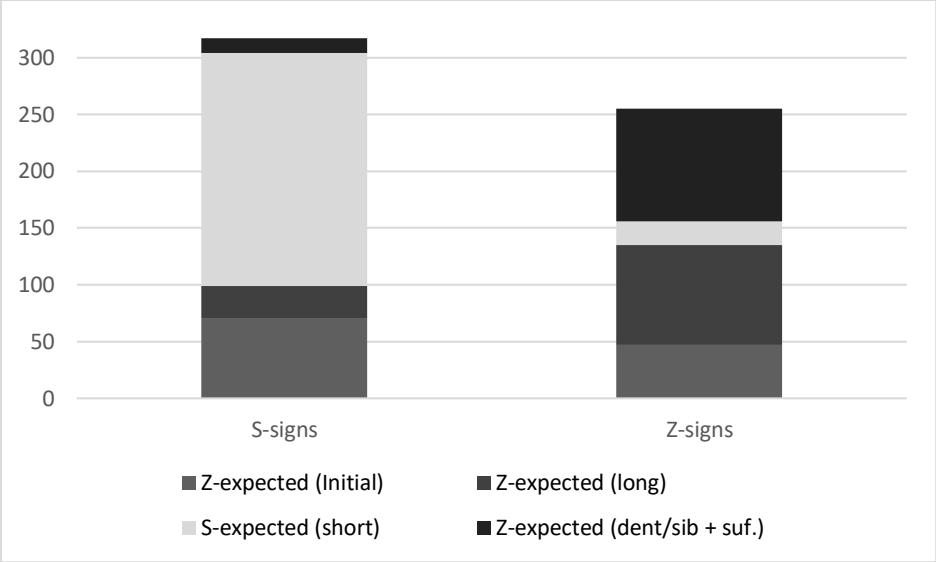

Figure 27: Number of occurrences of CV S- and Z-signs for the variable (s,z) in the northern-related letters in ACCOB.

The graphic in Figure 27 shows that most of the distributional characteristics for the orthography of /s/ in the large number of attestations from the north agree with the allophonic pattern described in Sommerfeld 1995. Thus, the use of S-signs correlates significantly with the representation of non-initial short /s/, amounting to around two thirds of all the cases of S-signs found in this group of letters[615]. At the same time, around 10% of the instances of /s/ in this context occur rendered by a CV sign of the Z-series. Doubled (i.e., geminated) /s/[616], and /s/ resulting from coalescence with /š/ from pronominal suffixes[617] are also correspondingly rendered by Z-signs in most of the occurrences: more than 75% of the instances in the case of the former and almost 90% of the cases for the latter.

By contrast, the query for the different choice of signs for word-initial /s/ returns a different result. Unlike the expected allophonic pattern, predominant for the other three phonological contexts analysed, there are more cases in which the word-initial phoneme is rendered by S-signs than Z-signs. The reasons behind this orthographic trend might be associated with the lexically-bound distribution across the corpus of a particularly distinct phonetic realisation of /s/. This trait was first suggested by Goetze (1945)[618] for a number of divergent lexemes in his data that occur consistently with S-signs. A similar phenomenon has been more recently analysed in Streck 2006 and Westenholz 2006[619].

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[614] See also sub-sections 4.2.2.2 to 4.2.2.5 for detailed lists of the 'unexpected' instances of S- and Z-signs represented in Figure 27.

[615] Due to their uncertain readings, the following instances from northern-related OB letters are not included in the research: *ˀla-síˀ*-[mi] (FM 2, 120:14); *i-s*[à(!)-k]*i*(!)-*pu-šu* (AbB 3, 38:5); *ka-am-ˀsu*(?)ˀ (AbB 8, 155:6); *š*[u](?)-*ku*(?)-*si*(?) (AbB 10, 118:5'); x-*si*(?)-*ih*(?) (AbB 8, 152:11); [at-ta-s]*a-ah* (AbB 1, 67:17); *mu-sa*-RUM-x (AbB 10, 102:1); *ti-si*(?)-*a-ma* (AbB 5, 244:22).

[616] The form *ˀas*?ˀ-*sú*?-*ú* (Edubba 7, 98:13), difficult to read, is not included in the data.

[617] The form *ú-da-ar-ra-ás-s*[*ú*(?)] (VS 22, 92:11) cannot be safely read and is, therefore, not considered here. Likewise, the last sign in *ši-pa*!-*su* (Edubba 7, 56:21), is read ŠU in Dalley and Al-Rawi 2000, 73, and it will not be included in the instances examined in the present study.

[618] Goetze 1945, 146, developped further in Goetze 1958, 140.

[619] Streck 2006, 224 and Westenholz 2006, 254.

It should be noticed that all the surveys in the present study (not only in this section) include the occurrences of the signs ZU and SU when they render /s/. However, the graphic similarity between both signs make them more prone to errors in copies and transliterations, and for that reason the variable (zu,su) for /s/ was left unexamined in Westenholz 2006[620]. This should be born in mind when inspecting the instances of the variables studied. However, the proportion of Z-signs and S-spellings in the northern-related sub-corpus of ACCOB (the largest and best attested of the subdivisions of the corpus) does not change substantially when the occurrences of signs SU and ZU are removed from the data. In Figure 28, below, it can be observed that without accounting for the signs ZU and SU, the allophonic pattern continues to apply to the distribution of most settings of /s/, with a prominent use of S-signs in non-initial short /s/ and with Z-signs rendering doubled phonemes. Simultaneously, word-initial /s/ remains to challenge the distribution expected from the allophonic pattern.

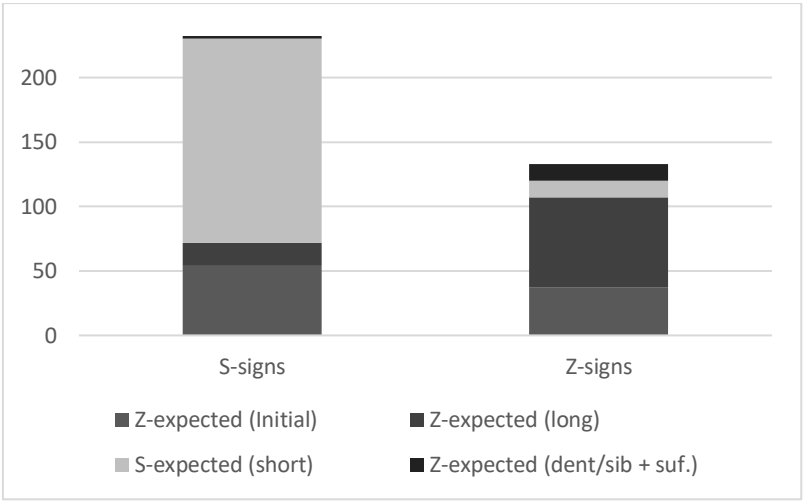


Figure 28: Number of occurrences of CV S- and Z-signs for the variable (s,z), excluding the signs ZU and SU, in the northern-related letters in ACCOB.

4.2.2.1 Lexically-bound constraints in the representation of word-initial /s/.

The greater number of S-signs for the representation of word-initial /s/ in Figure 27 does not fulfil the orthography predicted by the so-called allophonic pattern. This contrasts with the mostly regular operability of the allophonic pattern in the other three phonological contexts analysed in the present section. One circumstance that could be invoked as explanatory for this is the unbalanced nature of the sample of texts, which could have included a disproportionate number of word-initial /s/ instances from late OB texts. These later letters are assumed to represent a more developed stage towards the situation in Middle Babylonian, when the use of S-signs becomes the default norm in the rendering of /s/[621]. However, except for the poorly documented early OB period in northern-related letters (only three instances in total), a temporal variable does not seem to be a significant

[620] Westenholz explains: 'Since the ancient scribes, or quite often the modern copyists and editors of the texts, do not distinguish adequately between the very similar signs SU and ZU, and sometimes even ŠU, all forms involving those signs have been disregarded.' (Westenholz 2006, 258).
[621] Probably due to a process of deaffrication. See for instance the examples of late OB occurrences of /s/ with S-signs in Westenholz 2006, 258-260.

factor for the unexpected use of S-signs in the spelling of word-initial sibilant /s/ in the data.

Figure 29: Percentage of S- and Z-signs of the CV type, per period, for word-initial /s/ in northern-related letters from ACCOB[622].

Figure 29 shows the percentage of S-signs and Z-signs in word-initial /s/ according to a chronological distribution of the northern-related letters in ACCOB. As can be observed, the middle OB period (corresponding to the reigns of Hammurabi and Samsu-iluna[623]) does not differ significantly from later phases. Moreover, it accounts for more than half of the instances under consideration. A late date for most of the instances of S-signs for initial /s/, therefore, cannot be postulated as the only factor responsible for the orthographic trait observed in Figure 27.

As was mentioned above, another factor that could be accountable for at least part of the occurrences of S-signs in initial position is the existence of items with a phonetic realisation of /s/ that differs from the affricate articulation for word-initial phonemes postulated in the allophonic pattern. For the period around the reign of Hammurabi of Babylon (middle OB),

[622] See Table 41 in section 4.2.2.2 for a list of the instances of S-signs represented in the graphic. Regarding Z-spellings, the graph reflects the following instances: (1) early OB: sí-im-ma-am (Sumer 23, [IM 49233]:9) and sú-un (Sumer 23, [IM 49219]:14); (2) Sin-mu. to Si.: *sà-na-qum* (AbB 2, 14:9); *sà-ka-pí-im* (AbB 2, 4:8); *sà-na-qí-im* (AbB 2, 40:8); *sà-mi-nam*(sar) (AbB 3, 11:42); *sà-li-a* (AbB 3, 43:25); *sí-ka-tim* (AbB 3, 48:29); *sí-ka-tam* (AbB 3, 55:17); *sí-ka-tam* (AbB 3, 55:23); *sí-ik-ka-tam* (AbB 3, 55:29); *sí-ka-tim* (AbB 3, 55:9); *sí-ik-ka-as-sú-nu* (AbB 4, 103:18); *sí-ik-ka-as-s*[ú] (AbB 4, 41:14); *sí-ik-ka-as-sú* (AbB 4, 41:24); *sí-ik-ka-tam* (AbB 4, 77:28); *sí-ik-ka-as-sú* (AbB 4, 77:29); *sí-in-qá-am* (AbB 4, 84:10); *sí-ik-ka-at* (AbB 9, 144:3"); *sí-n*[i-i]*q-šu-nu*-[t]*i-ma* (AbB 9, 192:8); *sú-ti-i-im* (AbB 9, 6:5); *sí-ik-ka-*ʿaʾ-tim (AbB 11, 161:21); *sí-in-qá-am* (AbB 13, 39:12); [s]*ú-un-qí-im* (AbB 13, 47:7); *sí-ik-ru-um* (AbB 13, 5:6); *sí-ik-ru-um* (AbB 13, 5:6); *sà-ka-pa-am* (AbB 14, 70:18); *sí-ik-pa-nim* (AbB 14, 70:27) and *sú-qí-im* (RA 53, D 31:13); (3) late OB: *sí-in-qá-am* (AbB 2, 48:19); [s]*í-in-qá-am* (AbB 2, 49:19); *sú-ka-an-ni-ni*(mušen) (AbB 5, 267:11); *sí-ik-kà*-[tum] (AbB 6, 26:3); *sí-ik*-[k]*à-tum* (AbB 6, 27:2); *sí-ik-kà-tum* (AbB 6, 59:2); [s]*í*-[i]*k-kà-tum* (AbB 6, 61:2); *sú-uh-ra-aš-šu* (Haradum 2, 60:29) and *sú-ul-le-e-šu* (Haradum 2, 61:23); (4) unspecified: *sí-in-qá-ma* (AbB 5, 233:3'); *sí-is-sí-ik-tum* (AbB 5, 75:5); [s]*í-ku-ur* (AbB 5, 86:13'); *sí-im-mu-il-tim* (AbB 9, 20:11); *sà-an-qum* (AbB 9, 275:6); *sà-am-da-a-tim* (AbB 9, 58:6); *sí-ma-am*(?) (AbB 10, 42:20); *sí-in-qá-am-ma* (AbB 10, 48:15) and [s]*ú-un-nu-qá-at* (AbB 10, 78:7).

[623] Even within this sub-period, a merely temporal differentiation does not suggest any clear pattern of distribution: 14 of the instances are related to the reign of Hammurabi, 20 to the reign of Samsu-iluna and four to an undetermined period between Hammurabi and Samsu-iluna.

Streck (2006) detects a number of similar cases of initial S-signs[624] (in CV syllabograms) that contrast with other Z-signs in similar word-initial position. The proportion of these instances is indeed considerably smaller than that of the northern-related letters from ACCOB, but it applies to a corpus of more uniform texts, which indeed makes the alternation of spellings a more salient feature. Streck (2006) concludes that /s/ in word initial is normally affricate; S-signs in this position are 'only used exceptionally'[625]. His hypothesis is that, in some lexemes, the choice of signs of the S-series for word-initial /s/ is motivated by a non-affricate realisation ([s]) of that consonant. A similar phonetic explanation was proposed by Goetze (1945 and 1958) for a partly similar set of lexemes[626]. However, the ultimate cause for the fricative pronunciation of initial /s/ varies between Goetze 1958 and Streck 2006.

The following table shows the list of items assumed to contain a distinctive fricative [s] in Goetze 1945 and 1958, and in Streck 2006 along with tentative causal interpretations:

Table 40: OB lexemes and roots argued to realise a distinctive /s/ phoneme by Goetze (1945 and 1958), and Streck (2006).

N.	Lexeme or root	Author	Explanation
1	*sebe* 'seven'	Goetze 1945, 1958	PS *s_x
2	*samnum 'eight'*	Goetze 1945	PS *s_x
3	SDR 'do regularly'	Goetze 1958/ Streck 2006	PS *s_x / internal phonetic?
4	SDD? 'make a raid'/ uncert.	Goetze 1958/ Streck 2006	PS *s_x / internal phonetic?
5	SLM 'be at peace'	Goetze 1945, 1958/ Streck 2006	PS *s_x /Amorite loanword?
6	*sāmum*, *sūmum* 'red', 'redness'	Goetze 1945, 1958	PS *s_x
7	*bussurtum, tabsertum*[627] '(bringing of) good news'	Goetze 1958	PS *s_x
8	*massûm*[628] 'leader'	Goetze 1958	PS *s_x
9	*šasûm* 'to call'	Goetze 1945, 1958	PS *s_x
10	*sapārum* '(deity's) net'	Streck 2006	Sumerian loanword
11	*sahātum* 'pitfall'	Streck 2006	Amorite loanword

[624] The form *su-ni-ša*, in the text of the Code of Hammurabi (v r, 61) is not inlcuded in Streck's list. Other three instances of the initial S-sign in letters sent by Hammurabi that are missing in Streck 2006 are *sa-di-ir* (ARM 10, 168:5'), *sa-di*-[ir] (ARM 28, 4:3') and *sa-di-ir* (ARM 28, 9:17).
[625] Streck 2006, 224.
[626] Goetze's assumption, prior to the general acceptance of the allophonic pattern, was that Z-signs were a prevalent orthography in southern OB texts (irrespective of consonantal length of morpho-phonological context), while S-signs were characteristic of the North. This hypothesis led him to wrongly assume that the consistent use of S-signs in certain lexemes, but not in most of the cases, was a characteristic only salient in southern OB texts, whereas in northern OB, all instances of /s/, irrespective of their etymologies, were equally rendered by S-signs.
[627] Originally *busurtum* and *tabsirtum* in Goetze 1958, 140.
[628] Originally *mansum* in Goetze 1958, 140. According to Lieberman (1977), this form is a loanword from Sumerian MAŠ.SUD (Lieberman 1976, 388-389).

12	*sugāgum* 'sheikh'	Streck 2006	Amorite loanword
13	*š/sittum 'remnant'*[629]	Goetze 1945	?

Goetze (1958) assumes that an early Proto-Semitic (PS) phoneme, distinct from the rest of reconstructed PS sibilants (hence named s_x), is still distinguishable in a number of roots and lexemes of the OB (southern)[630] dialects, and contrasts with a similar /s/ phoneme[631]. Streck (2006), on the other hand, justifies the fricative articulation [s] in certain words as a contrastive feature in word-initial by pointing to either the non-Akkadian origin of some of the terms affected, or the internal phonological change. For numbers 11, 12 and, perhaps, five of the table, the alleged Amorite original pronunciation [s] would have remained distinguishable when it was borrowed by OB. The same process, according to Streck, could have occurred with number nine, in this case a loanword from Sumerian. On the other hand, for the roots SDR and SDD, Streck speculates that the S-signs in initial sibilants could have been caused by a process of deaffrication:

> A simple explanation for the use of the S-sign set with SDR is that [^{t}s] was deaffricated to [s] before a dental. (Streck 2006, 224)[632].

Likewise, Westenholz (2006), while acknowledging the different phonological status of the phoneme consistently rendered by S-signs in environments where /s/ appears represented by Z-spellings, sees no reason to assume the existence of a different Proto-Semitic phoneme, as proposed by Goetze[633]. In turn, Westenholz analyses some of the items in Table 40 as follows[634]:

- *sebe* and *samnum* (n. 1 and 2 in the table): are written with Š-signs in Old Assyrian 'as expected from their Semitic etymologies'[635],
- *salāmum* (n. 5): may also be a form derived from a common Semitic root *šlm*[636],
- *sadārum* (n. 3): its Semitic 'pedigree' is doubtful[637],
- *šasûm* (n. 9): for this form, there is evidence of Z-signs in OB spellings. Besides, the corresponding forms in Old Assyrian are regularly written with Z-signs[638].

[629] Goetze points out that: 'SI-*it-tum* "remainder" in the South corresponds to *ši-it-tum* in the North.' (Goetze 1945, 146).
[630] See footnote 622, above.
[631] Goetze comments: 'we must by necessity assume that, in the South, the SA SI SU set marked a sibilant different from both *s* and *š*' (Goetze 1958, 140).
[632] The deaffrication is explained to have initiated in preterite forms where /s/ and /d/ are in direct contact (*isdir*), and then spread to other forms of the paradigm (Streck 2006, 224).
[633] Westenholz adds: 'Goetze observed that some words are consistently written with S-signs in initial position, even in Early Old Babylonian, contrary to the normal use of Z-signs for initial /s/ […]. Even though few have been willing to follow Goetze in positing yet another Proto-Semitic sibilant on that basis, his evidence is unassailable and requires some kind of explanation' (Westenholz 2006, 254).
[634] Westenholz's review of Goetze's observations focused on cases of word-initial /s/: 'Goetze observed that some words are consistently written with S-signs in **initial position.**' (Westenholz 2006, 254) [Emphasis added]. However, Goetze (1958) also included two terms in which /s/ is not word initial: see instances n. 7 and 8 in Table 39.
[635] Westenholz 2006, 254.
[636] Cf. *tu-sà-al-li-im-šu-nu-ti* (AbB 12, 47:14).
[637] Contrary to Streck (2006), Westenholz argues that 'the Middle Hebrew and Aramaic counterparts [of SDR] may well be loans from Akkadian' (Westenholz 2006, 254).
[638] Ibid., note 7.

Westenholz (2006) also coincides with Streck (2006) in pointing out that some Sumerian loanwords and many Amorite personal names are likewise regularly written with S-signs. In sum, three different causes for a fricative realization [s] responsible of the regular S-spellings in a specific set of OB words have been suggested: Sumerian loanwords, west Semitic (Amorite) loanwords, and the manifestation of a phonemic distinction in Akkadian between the originally affricate sibilant |s*| and another type of sibilant. The latter has been speculated to originate from an additional and undetermined Proto-Semitic phoneme *s_x in Goetze 1945 and 1958, or from the development of an early phoneme already present in the Proto-Semitic inventory generally accepted[639].

Kogan 2011 presents a complete review of the issue from a general semitic comparative framework, concluding that:

> As supposed by Aro (1959, 331; cf. Steiner 1977, 50_51; Faber 1985, 105_106; 1986, 167_168), the emergence of 'Goetze's sibilant' is to be explained in phonetic terms: the 'general sibilant' [s] occasionally preserves its old value without shifting to [š].
>
> […] WS influence may be responsible for *salīmu* (cf. the regular *šalāmu* 'to be sound', Edzard 1985, 125; Diakonoff 1991_1992, 41; Streck 2000, 115_116) and *sādidu* (Streck 2000, 112_113), whereas in *sadāru* the shift [s] > [š] may be blocked by the contact with *d* (Streck 2006, 224; 2008, 250_251). (Kogan 2011, 84).

The question that follows is to what extent the S-spellings of word-initial /s/ shown in Figure 29: (1) refer to the lexemes or roots observed above, i.e. those lexemes typically written with S-signs in the general OB record, or (2) correspond to innovative 'fricative' renderings of words typically spelled with Z-signs elsewhere.

The only early OB instance of a word-initial /s/ is written with a S-signs: *sa-am-ta-am* (Sumer 23, IM 49253:6), and is indeed etymologically related to *sāmum* 'red', one of the lexemes in Table 40 (n. 6).

For the period covering the time of Sin-muballiṭ, Hammurabi and Samsu-iluna, the following instances of S-spellings of word-initial /s/ coincide with elements in Table 40[640]:

Table 41: Instances of S-spellings of initial /s/ in the group of middle OB northern letters in ACCOB that relate to terms from Table 39.

N.	Instance	Letter
1	*sa-di*-[ir]	ARM 28, 4:3'
2	*sa-di-ir*	ARM 6, 54:22

[639] The comments in Westenholz 2006 suggest that the phonetic characteristics represented by S-signs in the set of lexemes differentiated above, could perhaps be related to a phonemic development from one of the sources of OB /š/. It should be noted that OB /š/ is believed to be the result of two different processes of merging between three originally differentiated phonemes, conventionally referred to as /ṯ/, /ś/ and /š/ (or /s/). The system of sibilant phonemes for Proto-Semitic reconstructions is still a vexing problem in Semitic studies: 'Die genannten Sibilanten im allgemeinen und /s^1/ und /s^3/ im besonderen zählen zu den problematischsten Phonemen des Sem., da sie zahlreichen Artikulationsveränderungen unterliegen.' (Tropper 2012, 102). Cf. the name for phonemes in Tropper 2012: /s^3/ for the voiceless member of the triadic sibilants that realized as affricate in early stages of Semitic, and /s^1/ for the phoneme that was continuously articulated as a voiceless fricative [s] and merged with lateral /s^2/ in languages such Akkadian.

[640] The instances of the predicate *šasûm* 'to call' will not be considered along with the other terms from Table 40 as exceptionally represented by S-signs. See Westenholz 2006, 254, note 7 and evidence from ACCOB presented in following sections.

3	*sa-di-ir*	ARM 10, 168:5'
4	*sa-di-ir*	ARM 28, 9:17
5	*sa-di-ir*	ARM 6, 51:32
6	*sa-li-mi-im*	FM 6, 14:
7	*su-ul-lum*	FM 6, 14:
8	*sa-di-ir*	FM 6, 12:20
9	*s*[a]-*a*[d-ra(?)-am(?)]	AbB 3, 35:1
10	*sa-a*[d]-*ra-am*	AbB 3, 38:4
11	*sa-ad-ra-am*	AbB 3, 35:
12	*sa-di-ir*	AbB 3, 12:2
13	*sa-di-ir-ma*	AbB 3, 11:5
14	*se-bu-ut*[641]	AbB 14, 80:16

The instances in the table belong to letters sent by Hammurabi (n. 1-5), Belšunu (9-11), Marduk-naṣir (n. 12-13), Inbuša (n. 14), Nur-Šamaš (n. 8) and Mut-haqdim et al. (n. 6-7). Out of these individuals, only the letters of the first three senders have sufficient data to compare the written behaviour of other CV signs for /s/. The letters from Belšunu and Marduk-naṣir (Lagaba, reign of Samsu-iluna) present S-signs in other occasions where Z-signs are expected[642]. Their instances, therefore, cannot be clearly contrasted to Z-signs in the same context and do not constitute examples of clear-cut evidence for the existence of a phoneme /s/ distinct from deaffricated /s/. The group of letters from King Hammurabi, however, does not only consist of a large amount of texts, but also agrees broadly with the allophonic pattern[643]. This suggests that the spellings of instances 1-9 in Table 41 can be considered salient in comparison with the spelling of other lexemes containing /s/ in his correspondence.

The letters classified as late OB in the northern group do not include any instance of the items singled out by Goetze or Streck and listed in Table 40. Among the letters of uncertain chronology, the following instances of S-spellings of word-initial /s/ match items from the aforementioned Table 39: *se-bi* (AbB 10, 112:12), *si-it-ti* (AbB 10, 8:9)[644], and *si-ta-ti-im* (AbB 10, 41:3')[645].

If it is assumed that the origin of the sibilant in lexemes and roots observed in Table 40 is to be distinguished from |s*| (which is realised by the pair of affricate and deaffricate allophones), a chronologic presentation of written evidence for the phonological change of |s*| in OB should not include the instances listed in Table 39. The following figure presents

[641] In *sebūt šattim*, the name of a festival. The first word refers to the 'seventh' day of the 'seventh' month (see references to comments by M. Stol and D. Charpin in Veenhof 2005 (AbB 14), 216).

[642] For Belšunu, see *sa-mi-du*-[um] (AbB 3, 110:8), *si-ka-re-e* (AbB 3, 110:18; if indeed the sender of AbB 3, 110 is the same sender as the Belšunu in AbB 3, 35 and 38: see Frankena 1978, 259), or *wa-ar-ka-su* (AbB 3, 50:18). For Marduk-naṣir, *sa-mi-ik-ma* (AbB 3, 11:39) and *qá-as-su* (AbB 3, 11:31) are in the same letter as *sa-di-ir-ma* (n. 13 in Table 41). See also the form *ta-na-sa-ah* in another letter from Marduk-naṣir (Abb 3, 14:10).

[643] See Streck 2006. Cf., however, the spelling for the term *Sutû*, examined in the next section.

[644] The letter AbB 10, 8, tentatively classified as northern-related for their links to the city of Kiš (archive of Gimil-Marduk, see Kraus 1985 [AbB 10], xvii), presents occasional orthographic features associated to southern practices such as the spelling *ṭù* in *li-ba-al-li-ṭù-ka* (AbB 10, 8:4), or the nasalization of geminated stop consonants (see chapter 5). A connection of this letter with southern orthographies would support Goetze's observation that the S-spelling of the term *šittum* is a southern OB feature. For the occurrence of the same spelling in a letter from Lu-Ninurta, see section 4.2.3.1.

[645] Like AbB 10, 8, this letter is only tentatively related to Kiš (see Kraus 1985 [AbB 10], xvi-xvii).

the temporal distribution of occurrences of word-initial /s/ in northern-related texts in ACCOB, excluding those instances that match roots and lexemes in Table 40[646].

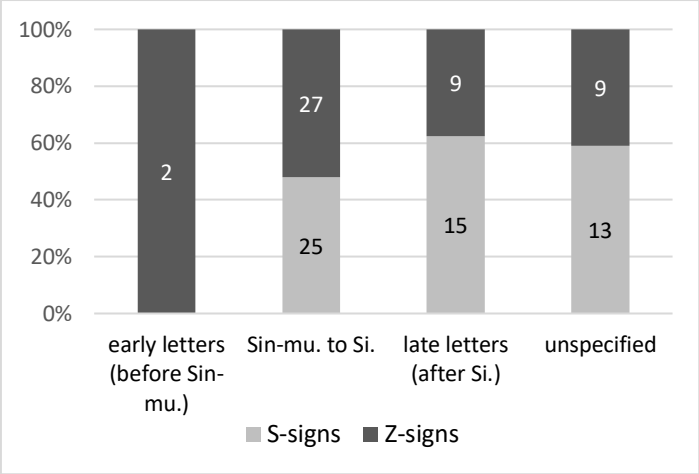


Figure 30: Percentage of S- and Z-signs (of the CV type), per period, for word-initial /s/ in northern-related letters from ACCOB, excluding forms of the lexemes and roots listed in Table 39.

Figure 30 shows a slightly different distribution of Z- and S-signs than that in Figure 29, suggesting a discernible increase of S-spellings in word-initial /s/ that correlates with the temporal progression. However, the lack of sufficient data, especially from the early OB stage, prevents a significant differentiation of the variable (s,z) across a temporal axis.

4.2.2.2 Exceptions to the allophonic pattern in word-initial /s/[647]

The occurrences of S-signs in word-initial /s/ for all the periods comprised in the group of northern-related OB letters are presented in Table 42, below.

Table 42: S-spellings in CV signs for word-initial /s/ in northern-related texts in ACCOB, excluding those middle OB cases of word-initial /s/ already shown in section 4.2.2.1.

N.	Form	Letter	Sender	Period
1	*sa*-[k]*a*-*p*[í]-*im*	AbB 6, 190:14'	Marduk-mušallim	late
2	*sa-ak-kum*	AbB 5, 268:6	[…]-qarrad	unspecified
3	*sa-am-da-t*[i-x]	AbB 5, 211:6’	Sin-eribam	unspecified
4	*Sa-am-ha-ri-*ʾ*i*ʾ[648]	AbB 1, 2:8	Ammi-ṣaduqa	late
5	*Sa-am-ha-ri-i*	AbB 10, 150:11	Ammi-ṣaduqa	late
6	*Sa-am-ha-ru-ú*	AbB 7, 47:7	Ammi-ṣaduqa	late
7	*sa-as-sú*	VS 22, 84:18	Iddin-Šamaš	late
8	*sa-bi-i*	AbB 14, 79:14	Nabium-malik	Sin-mu - Si
9	*sa-bi-i*	AbB 14, 79:9	Nabium-malik	Sin-mu - Si
10	*sa-da-na-ka-tum*	AbB 14, 68:8	Šamaš-naṣir II	Sin-mu - Si

[646] It is reminded that these do not include instances of the predicate *šasûm*.
[647] Uncertain instances not included in the study: [at-ta-s]*a-ah* (AbB 1, 67:17); ʾ*as*?ʾ-*sú*?-*ú* (Edubba 7, 98:13) *ša-sú*?-*ú-um* (RA 90, p125 [NBC 6311]:20); *š*[u](?)-*ku*(?)-*si*(?) (AbB 10, 118:5'); *i-s*[à(!)-k]i(!)-*pu-šu* (AbB 3, 38:5); x-*si*(?)-*ih*(?) (AbB 8, 152:11); *ši-pa*!-*su* (Edubba 7, 56:21); *ti-si*(?)-*a-ma* (AbB 5, 244:22); *si*(?)-x (AbB 10, 94:6); *si*-x-[…] AbB 10, 37:12); ʾ*la-sí* ʾ-[mi] (FM 2, 120:14); *ka-am-*ʾsu(?)ʾ (AbB 8, 155:6); *si*$_4$-*ha-ri* (AbB 3, 65:5); *mu sa* RUM x (AbB 10, 102:1).
[648] Name of an ethnic group, perhaps a Kassite tribe (Van Lerberghe 1995, 385).

11	*sa-da-na-ki*	AbB 14, 68:9'	Šamaš-nașir II	Sin-mu - Si
12	*sa-mi-du*-[um]	AbB 3, 110:8	Belšunu	Sin-mu - Si
13	*sa-mi-ik-ma*	AbB 3, 11:39	Marduk-nașir	Sin-mu - Si
14	*sa-na-qí-im*	AbB 12, 72:28	Nabium-nașir	late
15	*sa-na-qí-im*	AbB 14, 31:29	Adad-rabi	Sin-mu - Si
16	*sa-na-qí-im*	AbB 14, 31:12	Adad-rabi	Sin-mu - Si
17	*se-er-di*	VS 22, 84:13	Iddin-Šamaš	late
18	*se-er-du-um*	VS 22, 83:40	Uqnitum	late
19	*se-ke-ri-im*	AbB 10, 179:11	Abi-ešuh	late
20	*se-ke-ri-im*	AbB 13, 180:15	[…]-bi	unspecified
21	*se-ke-ri-im*	AbB 5, 224:11	Zimri-Erah	unspecified
22	*si*-[l]*i-ih-ti-ka*	AbB 3, 27:6	Abum-waqar	Sin-mu - Si
23	*si-ik-ra*	EDUBBA 7, 126:21	[...]-dayatum	Sin-mu - Si
24	*si-in-qá-am*	AbB 12, 7:21	Nabium-nașir	late
25	*si-in-qá-am*	AbB 14, 187:14	Belanum	unspecified
26	*si-in-qá-ni-im*	AbB 10, 75:15	Iluni-šarrum	unspecified
27	*si-ir*	AbB 2, 140:13	Tatur-matum	Sin-mu - Si
28	*si-ka-re-e*	AbB 3, 110:18	Belšunu	Sin-mu - Si
29	*si-it-ti*	AbB 10, 8:9	Dan-Irra	unspecified
30	*si-li-ih-ti*	AbB 10, 94:5	Qerub-Marduk	unspecified
31	*si-li-ih-ti*-[k]*a*	AbB 3, 27:5	Abum-waqar	Sin-mu - Si
32	*si-ma-ni-šu-nu*	AbB 6, 92:13	Marduk-kašid	Sin-mu - Si
33	*si-mi-il-tam*	AbB 5, 227:17	Sin-eribam II	unspecified
34	*si-pí-ih-ti*	AbB 10, 6:7	Pi-Aya	unspecified
35	*si-ra-ma-tim*	AbB 10, 93:10	Unknown XXXIII	late
36	*si-ri-am*	AbB 2, 110:15	Tatur-matum	Sin-mu - Si
37	*si-si-ik-ta-am*	AbB 14, 19:16	Nabi-Enlil	Sin-mu - Si
38	*si-ta-ti-im*	AbB 10, 41:3'	Munawwirum	unspecified
39	*su-ha-ii-im*	AbB 12, 56:12	Awil-ilim	unspecified
40	*su-ka-an-ni*	AbB 7, 157:7	Riš-Marduk	late
41	*su-ka-an-ni-ni*	AbB 2, 116:19	Riš-Marduk	late
42	*su-ki*	AbB 3, 47:12	Taribum	Sin-mu - Si
43	*su-qí-im*	AbB 10, 81:3'	Unknown XXV	late
44	*Su-ti-i*	AbB 5, 230:7	Habil-abum	unspecified
45	*Su-ti-i*	ARM 6, 51:35	Hammurabi	Sin-mu - Si
46	*Su-ti-i*	ARM 6, 51:39	Hammurabi	Sin-mu - Si
47	*Su-ti-i*	ARM 28, 8:6’	Hammurabi	Sin-mu - Si
48	*Su-ti-i*	AbB 3, 1:7	Samsu-iluna	Sin-mu - Si
49	*Su-ti-i*	AbB 3, 1:12	Samsu-iluna	Sin-mu - Si
50	*Su-ti-i*	AbB 5, 230:7	Habil-abum	unspecified
51	*Su-tu-ú*	AbB 10, 150:8	Ammi-șaduqa	late
52	[S]*u-tu-ú*	ARM 6 51:37	Hammurabi	Sin-mu - Si
53	*su-uk-ki*	AbB 3, 13:6	Marduk-nașir II	Sin-mu - Si
54	*su-un*	AbB 11, 55:18	Naramtani	unspecified

55	*s*[u]-*un-nu-qí-im*-[m]*a*	AbB 11, 161:6	Samsu-iluna	Sin-mu - Si
56	*sa-am-ta-am*	Sumer 23, [IM 49253]:6	Matatum	early

One salient feature among the forms presented above, is the transliteration of *Sutû*, the name for the Sutean people. The form occurs nine times in the northern-related letters in ACCOB, being in all cases exclusively rendered by S-signs. Moreover, four of these instances are from Hammurabi's letters: [S]*u-tu-ú* (ARM 6 51:37) and *Su-ti-i* (ARM 6, 51:35; ARM 6, 51:39 and ARM 28, 8:6')[649]. For the same period, S-spellings also occur in Samsu-iluna's *Su-ti-i* AbB 3, 1:7 and AbB 3, 1:12[650].

The preference for S-spellings in the writing of *Sutû* is also constant in other corpora such as AbB and the OB texts from Mari. However, a few exceptions to this orthographic trend are also found in OB texts: e.g., *Sú-ti-i-im* (AbB 9, 6:5), *Sú-tu-ú* (AbB 7, 86:33 and AbB 7, 89:9), *sú-ti* (NABU 1, pp. 127-130 [A.2993]:39). It is not entirely clear whether the prominent orthographic rendering of the term *Sutû* by means of S-signs in ACCOB could be related to a spread deaffricate articulation [s] of an originally affricate phoneme [t͡s][651], or could be related to other external factors. It is worth noting that the forms [S]*u-tu-ú* and *Su-ti-i* represent the only exception to the allophonic pattern in the letters from Hammurabi[652], along with the forms of the predicate *sadārum*[653].

It should also be noticed that the forms n.8 and 9 (*sa-bi-i*), and n. 30 and 31 (*si-li-ih-ti*; *si-li-ih-ti-ka*), although not occurring in Goetze's or Streck's list, belong, according to Kogan (2011), to the group of Akkadian words that etymologically derive from a sibilant other than |*s|. Notice the correspondence in other Semitic languages given by L. Kogan:

> Akk. *sâbu* _ Hbr.*š'b* 'to draw water' (AHw. 1000, HALOT 1367, Faber 1986, 166)
> Akk. *silītu* _Hbr. *šilyā*, Syr. *šlītā* 'afterbirth' (SED I No. 246, Faber 1986, 166) (Kogan 2011, 84).

[649] It should be noticed, that instances number 1-9 in Table 41 (section 4.2.2.1) and all the instances of the term for Suteans in letters from Hammurabi in Table 42 occur exclusively in the relatively small group of letters that Hammurabi sent to Mari, which differ in certain features with the rest of Hammurabi's letters.
[650] The letters from Samsu-iluna, however, also include what seems to be a word-initial S-sign in the form *s*[u]-*un-nu-qí-im*-[m]*a* (AbB 11, 161:6).
[651] The presence of a dental consonant in the syllable that follows the sibilant (/t/ in *Sut̲û*) recalls Streck's hypothesis for the use of S-signs in the roots SD̲R and SD̲D (Streck 2006, 224). The evidence for /s/ in word-initial position followed by dental(alveolars) in the data from ACCOB is limited. However, to the mentioned cases of SD̲R, *šit̲tum*, *Sut̲û* we can find a few other forms: *sa-d̲a-na-ka-tum* and *sa-d̲a-na-ki* (AbB 14, 68:8 and 9'), *sa-d̲*[u-up-ta]-*am* and *sa-d̲u-up-tim* (AbB 14, 111:9 and 25). However, Z-signs are also attested followed by dental(alveolar) consonants: *sú-t̲i-ku-nu* (AbB 11, 178:8), and *sú-t̲u-uq-ma* (RA 30, p.98-100); these two instances occur in southern-related letters.
[652] This refers to the four morpho-phonological scenarios studied in this section. For the result of contact between /š/ and /š/ see section 4.3.
[653] The lack of sufficient attestions in the OB letters prevents the analysis of the written representation of another ethnic name that occurs written with word-initial S-sign in Table 41: *Samharû*. The initial sibilant of this term could have also reflected a phoneme resembling [s], borrowed from a non-Akkadian language. However, the only instances found in the corpus stem from the reign of Ammi-ṣaduqa and might also reflect a general tendency to use S-signs for /s/ in all phonetic environments.

Furthermore, the S-spelling for the forms *sa-da-na-ka-tum* and *sa-da-na-ki* (n. 10 and 11 in the table), can be argued to be motivated by a Sumerian origin of the term *saddanakkum* 'administrator of date orchards'[654].

4.2.2.3 Exceptions to the allophonic pattern in long /s/

The occurrences of S-signs for long /s/ (geminated or from assimilation between /n/ and /s/) in northern-related texts are presented in Table 43, below[655].

Table 43: S-spellings in CV signs for long /s/ in northern-related texts in ACCOB.

N.	Form	Letter	Sender	Period
1	*a-na-sa-ah-ma*	AbB 10, 102:8	Unknown XXXVI	unspecified
2	*a-pa-sa-as*	AbB 14, 66:21	Shamash-naṣir II	Sin-mu - Si
3	*i-me-su-ú*	AbB 8, 46:17	Atahzum	Sin-mu - Si
4	*i-sa-ʾanʾ-qá-ma*	AbB 13, 156:8	Nur-ilišu	unspecified
5	*i-ša-ás-si*	AbB 8, 136:10	Marduk-naṣir IV	Sin-mu - Si
6	*i-ša-ás-si*	AbB 2, 139:6	Marduk-mušallim	unspecified
7	*i-ša-ás-si*	AbB 5, 134:4'	Saluhum	unspecified
8	*i-ša-ás-su-ú*	AbB 12, 2:21	Iluni	late
9	*i-ša-si*	AbB 3, 59:13	Badija	Sin-mu - Si
10	*ʾiʾ-ša-su-ni-ki-im*	AbB 12, 129:10	Ili-u-Šamaš	unspecified
11	*i-ša-su-šu*	AbB 5, 134:2'	Saluhum	unspecified
12	*li-im-te-si*	AbB 3, 36:27	Belšunu	Sin-mu - Si
13	*li-is-su-hu-nim-ma*	AbB 7, 49:13	Ammi-ṣaduqa	late
14	*li-is-su-hu-nim-ma*	AbB 10, 150:27	Ammi-ṣaduqa	late
15	*li-su-hu-ni-kum-ma*	AbB 3, 29:10	Šu-Amurrum	Sin-mu - Si
16	*ni-ka-si-šu-nu*	AbB 12, 44:20	Ipqu-Šala	unspecified
17	[n]*i-ka-ás-si*	AbB 8, 148:25	Belšunu	Sin-mu - Si
18	[ni-ka-a]*s-s*[i]*-šu-nu*	AbB 10, 59:11	Etel-pi-Marduk II	Sin-mu - Si
19	*ši-pa-as-si-ka*	YOS 15, 66:4'	Alammuš-naṣir	Sin-mu - Si
20	*si-si-ik-ta-am*	AbB 14, 19:16	Nabi-Enlil	Sin-mu - Si
21	*ta-ás-su-hu*	AbB 14, 69:22	Shamash-naṣir II	Sin-mu - Si
22	*ta-na-sa-ah*	AbB 12, 53:11	Awil-ilim	unspecified
23	*ta-na-sa-ah*	Abb 3, 14:10	Marduk-naṣir	Sin-mu - Si
24	*ta-na-sa-ah-šu*	AbB 14, 69:26	Shamash-naṣir II	Sin-mu - Si
25	*ta-na-sa-ha*	AbB 10, 183:8	Lumur-ša-Marduk	Sin-mu - Si
26	*ta-ša-si-i-ma*	AbB 12, 51:25	Awil-ilim	unspecified
27	*ta-su-uh*	AbB 12, 53:8	Awil-ilim	unspecified
28	*up-ta-si-is-sí*	AbB 3, 34:14	Belšunu	Sin-mu - Si

[654] The form is also attested in Akkadian rendered by Š-signs. K. Veenhof, the editor of the letter in AbB 14 where *sa-da-na-ka-tum* and *sa-da-na-ki* occur, notes: 'These rare syllabic spellings of GAL.NI / s a n t a n a use SA and not ŠA.' (Veenhof 2005 (AbB 14), 61, note 68c).

[655] See the discussion about these spellings and other 'exceptions' to the allophonic pattern in northern-related letters from ACCOB in sub-section 4.2.2.6.2, below.

The relevance of the instances listed in the table will be addressed in section 4.2.2.6.

4.2.2.4 Exceptions to the allophonic pattern in non-initial short /s/

The exceptions to the allophonic pattern for the spelling of non-initial short /s/ are particularly interesting for two reasons. First, it is the only scenario in which, according to the allophonic pattern, the expected orthography for /s/ implies the use of signs of the S-series. This means that instances of /s/ in this morpho-phonological scenario provide the only evidence to distinguish between two fundamentally different writing practices: (1) systems that employ consistently Z-signs of the CV type to render /s/, irrespective of its length or position (as in Old Akkadian); (2) orthographies that comply with the allophonic pattern. Second, unless other 'irregular' spellings of /s/, when the non-initial short /s/ is not rendered by S-signs, the orthography is not considered innovative but conservative; that is, it resembles the scribal practises of Old Akkadian rather than those of Middle Babylonian.

The following instances of Z-spellings can be singled out as exceptions to the allophonic pattern in northern-related letters in ACCOB:

Table 44: Z-spellings in CV signs for non-initial short /s/ in northern-related texts in ACCOB.

N.	Form	Letter	Sender	Period
1	*li-ik-mi-sú*	AbB 8, 98:41	Gimil-Marduk	late[656]
2	*ú-sà-ki-pa-ni**[657]	Edubba 7, 117:8	Hu-[…]	unspecified
3	*ip-ru-sú-ma*	AbB 4, 40:24	Hammurabi	Sin-mu - Si
4	*ka-am-s*[ú]-⌜*ú*⌝[658]	AbB 2, 59:8	Hammurabi	Sin-mu - Si
5	*li-ik-ki-sú-ma*	AbB 13, 23:18	Hammurabi	Sin-mu - Si
6	*ú-sú-úh-šu-nu-ti*	AbB 5, 136:12	Hammurabi	Sin-mu - Si
7	*i-s*[à-r]*a-ar**[659]	AbB 12, 32:28	Adad-magir	unspecified
8	*ri-i*[k]-*sí-im*[660]	AbB 12, 32:12	Adad-magir	unspecified
9	*tu-sà-al-li-im-šu-nu-ti*[661]	AbB 12, 47:14	Sin-iddinam	unspecified
10	*i-sà-ki-pa-am*	AbB 14, 70:21	Šamaš-naṣir II	Sin-mu - Si
11	*na-ah-sà-tim*[662]	AbB 14, 70:26	Šamaš-naṣir II	Sin-mu - Si

[656] The letter has been related to the reign of Ammi-ditana (see Cagni 1980 [AbB 8], 63, note 98a).
[657] This form can represent a preterite in D-stem, but it could also represent a perfect tense without notation of double consonants (*ussakkipanni*), in which case the Z-spelling would fit into the allophonic pattern. The translation in Edubba 7 reads: '[My father's sister] has done for me!' (Al-Rawi and Dalley 2000, 125). It should be noticed, however, that the same letter includes a word-final VC sign of the Z-sign (*pu-ru-**us***), which is uncommon in northern-related letters in ACCOB (see section 4.4).
[658] This occurrence is listed in Streck 2006, 220 as an example of a Z-sign for /s/ in syllable initial position after a consonant. However, the extant copy in LIH II, 75 presents a broken sign that cannot be identified with certainty as ZU or SU.
[659] This form might be rendering, in fact, doubled /s/. See van Soldt's comment in AbB: 'Probably *sarārum* N. Note, however, that according to the dictionaries an N-stem of this verb is not yet attested for the Old Babylonian period' (van Soldt 1990 [AbB 12], 27, note 32e).
[660] See, however, the form *ru-ku-sa-ku* (AbB 12, 32:8) in the same letter.
[661] Translated in AbB 12 as: 'If you reconcile them' (van Soldt 1990 [AbB 12], 37). If *sà* representes indeed a short /s/, this instance would contradict the tendency to render forms of *salāmum* wih S-signs observed by Goetze (1945 and 1958) and Streck (2006). A Z-sign could perhaps be expected if the form is analysed as a Perfect D-stem.
[662] See the comment by K. Veenhof: '*nahsatum* […] meaning unknown' (Veenhof 2005 [AbB 14], 212).

12	*na-sà-hu*	AbB 14, 218:8[663]	Šamaš-naṣir II[664]	Sin-mu - Si
13	*li-ip-ru-s*[ú]-*ni-ku*[m]	AbB 9, 137:25	Šamaš-hazir[665]	unspecified
14	*li-ip-ru-sà-*[a]*m*	AbB 9, 137:18	Šamaš-hazir	unspecified
15	*pu-ur-sà-*[m]*a*(?)	AbB 9, 85:8	Šamaš-hazir	unspecified
16	*ú-sà-a*[p-p]*a-hu-ma*	AbB 9, 20:7	Šamaš-hazir	unspecified
17	*ú-da-ru-sú-ši*	AbB 5, 249:6	Unknown V	unspecified
18	*pu-ur-sà-am*[666]	Sumer 23, IM 49253:13	Matatum	early
19	*na-ka-sí-im*	Edubba 7, 97:5	Ibbi-Ilabrat	Sin-mu - Si
20	*ka-sí-i-ma*[667]	AbB 12, 51:6	Awil-ilim	unspecified
21	*ú-sú-u*[h][668]	AbB 13, 180:33	[…]-bi	unspecified

In the examination of OB spellings for non-initial short /s/, Streck (2006) makes a distinction between sibilants that occur in intervocalic position and those that occur after a consonant. He concludes that, for the corpus analysed, both cases can be written with S- or Z-signs, although 'the phoneme /s/ in syllable initial position after a vowel is much more frequently written with S-signs than with Z-signs' (Streck 2006, 225).

Nevertheless, Streck (2014) describes a pattern whereby intervocalic /s/ is rendered by S- and Z-signs (with examples from the Code of Hammurabi for both cases), whereas, by contrast, non-initial /s/ after consonant appears related only to Z-spellings[669].

The analysis of both variables in the northern-related letters from ACCOB, however, does not show any significant difference between both types of non-initial short /s/. It is true that Z-spellings for the intervocalic type are more numerous (16 instances[670]) than for the type of /s/ following a consonant (only 5 occurrences[671]). Nevertheless, their relative frequency is not significantly different. As Figure 31 shows, if we take into account all the general instances of non-initial short /s/ in northern-related letters in ACCOB, we find that intervocalic /s/ is also far more frequent than /s/ following a consonant in the corpus. In both cases, the preferred CV spelling for non-initial short /s/ (in over 80% of the instances) involves the set of S-graphemes[672].

[663] See however the form *na-sa-hi-im* (AbB 14, 218:10) in the same letter.

[664] The identification of the verbal root in the form *ta-ap-la-sú-ma*(?) (AbB 14, 71:6) is difficult and, therefore, has not been included in the list. Veenhof (2005) notes: 'Difficult, since *palāsum* and *palāšum* both have *u* as the preterite theme vowel and the spelligs exclude *apālum*.' (Veenhof 2005 [AbB 14], 63, note 71b).

[665] Individual attested in the archive of Belšunu (perhaps related to Kiš). Not to be confused with Hammurabi's administrator in Larsa.

[666] The transliteration in Sumer 23 has *sa* (SA) but the copy from the same source shows a sign ZA.

[667] The transliteration in AbB 12 includes the capitalized sign: *ka*-ZI-*i-ma*, showing the unexpected Z-sign for the interpreted form of *kasûm* 'to bind'. In the text, the predicate refers to the noun *kaspum* 'silver', and the translation proposed in AbB 12 reads: 'The silver has been reserved'. However, van Soldt adds: 'Lit. "bound", N. Illingworth: "secured". […] Only in Old Assyrian is *kasûm* used in combination with silver. […] The context here seems to point to a meaning different from Old Assyrian.' (van Soldt [AbB 12], 41 note 51a).

[668] The instance is interpreted in AbB 13 as an Imperative form of the predicate *nasāhum* 'to tear out'. However, W. van Soldt points out: 'The translation is uncertain, literally:"Withdraw your hand". One can also translate: "Finish up (with it)".' (van Soldt 1994 [AbB 13], 151, note 180e).

[669] Streck 2014, 25 (§63 c), d) and e)).

[670] Instances n. 1, 2, 3, 5, 6, 7, 9, 10, 12, 13, 14, 16, 17, 19, 20 and 21 in Table 44.

[671] Instances n. 4, 8, 11, 15 and 18 in Table 44.

[672] See, however, section 4.2.3.3 for the different proportion of S- and Z-spellings in southern-related letters.

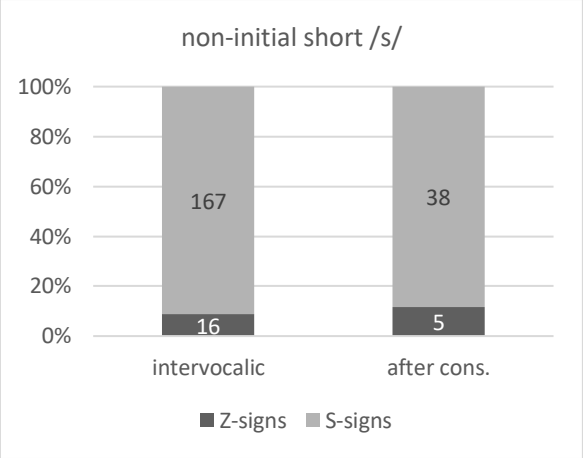


Figure 31: N. of instances of non-initial short /s/ in northern-related letters from ACCOB, divided into the intervocalic and after consonant types.

4.2.2.5 Exceptions to the allophonic pattern in the contact between a dental(-alveolar)/sibilant (other than /š/), and /š/ from a pronominal suffix.

The smaller number of exceptions to the allophonic pattern where a CV sign of the S-series occur instead of an expected Z-sign, come from the spelling of the phoneme resulting from the phonological coalescence between dental(-alveolar) or sibilant consonant (other than /š/) and the onset consonant /š/ from pronominal suffixes.

Table 45: S-spellings in CV signs for /s/ resulting from contact between a dental(-alveolar)/sibilant (other than /š/) and /š/ from a pronominal suffix in northern-related texts in ACCOB.

N.	Form	Letter	Sender	Period
1	[š]*i-bu-su*	AbB 12, 41:13	Ibbatum	unspecified
2	[tap]-*pu-su*	AbB 3, 49:16	Belšunu	Sin-mu - Si
3	<za>-*ku-ús-sa*	AbB 14, 93:18	Ṭemi	unspecified
4	*aṣ-ba-ás-si-i-ma*	AbB 11, 55:19	Naramtani	unspecified
5	*i-zi-su*	AbB 6, 7:13	Geme-iškurra, Nanna-intuh	unspecified
6	*qá-as-su*	AbB 3, 11:31	Marduk-naṣir	Sin-mu - Si
7	*re-qú-ús-su*	AbB 12, 48:7	Sin-iddinam[673]	unspecified
8	*ša-na-ás-su*	AbB 14, 97:10	Lumur-ša-Marduk	Sin-mu - Si
9	*ši-bu-su*	AbB 12, 39:20	Ibbatum	unspecified
10	ŠUKU-*su-ú*	AbB 3, 55:14	Nur-Amurrum	Sin-mu - Si
11	*ta-pu-ú-su-ú*	AbB 6, 85:21	Munawwirum	Sin-mu - Si
12	*wa-ar-ka-su*	AbB 3, 50:18	Belšunu	Sin-mu - Si
13	*wa-ar-ka-su-nu*	RA 53, D 24:9	Ilšu-bani	Sin-mu - Si

The role of temporal factors and individual scribal traits in the emergence of the instances listed in Table 44, as well as other irregularities of the allophonic pattern in northern-related letters, are discussed in the following section.

[673] The writer of this letter is assumed to be the same Sin-iddinam from the archive of Nanna-intuh (i.e. the writer of AbB 12, 47). However, the addressee of this letter is not certain to be Nanna-intuh (Van Soldt 1990 [AbB 12],39, 48a).

4.2.2.6 Chronological and individual biases

As explained before, Goetze (1958) and Streck (2006) posit some factors as potentially priming elements for the consistent S-spellings of word-initial /s/ in certain lexical items. It has been argued, for example[674], that the phonetic realization [s], which is assumed to motivate the orthography of these items, might not be the result of a spirantization process of an earlier affricate phoneme, but the representation of an originally different phoneme, either incorporated in loanwords or evolved from earlier Akkadian sibilants[675]. However, even though this particular set of roots and lexemes accounts for an important number of instances of word-initial S-spellings (see Table 40 in 4.2.2.1), Z-signs for /s/ in word-initial position are still less frequent than S-signs for other lexical items in the data[676]. Therefore, word-initial /s/ is the only morpho-phonological environment that does not plainly fall into the allophonic pattern among the northern-related OB letters in ACCOB.

Additionally, it is not clear whether the spelling of frequent tokens in the data such as *Sutû* (consistently attested with S-signs in OB), could have been associated with lexical borrowing from West-Semitic languages, with internal phonetic developments, or even with a process of analogy with the non-affricate /s/ of the lexemes mentioned above. Nevertheless, the general exposition of instances of CV signs that disallow the allophonic pattern (Tables 42 - 45), shows a tendency whereby word-initial /s/ is the most frequent scenario where expected Z-signs are replaced by S-spellings[677].

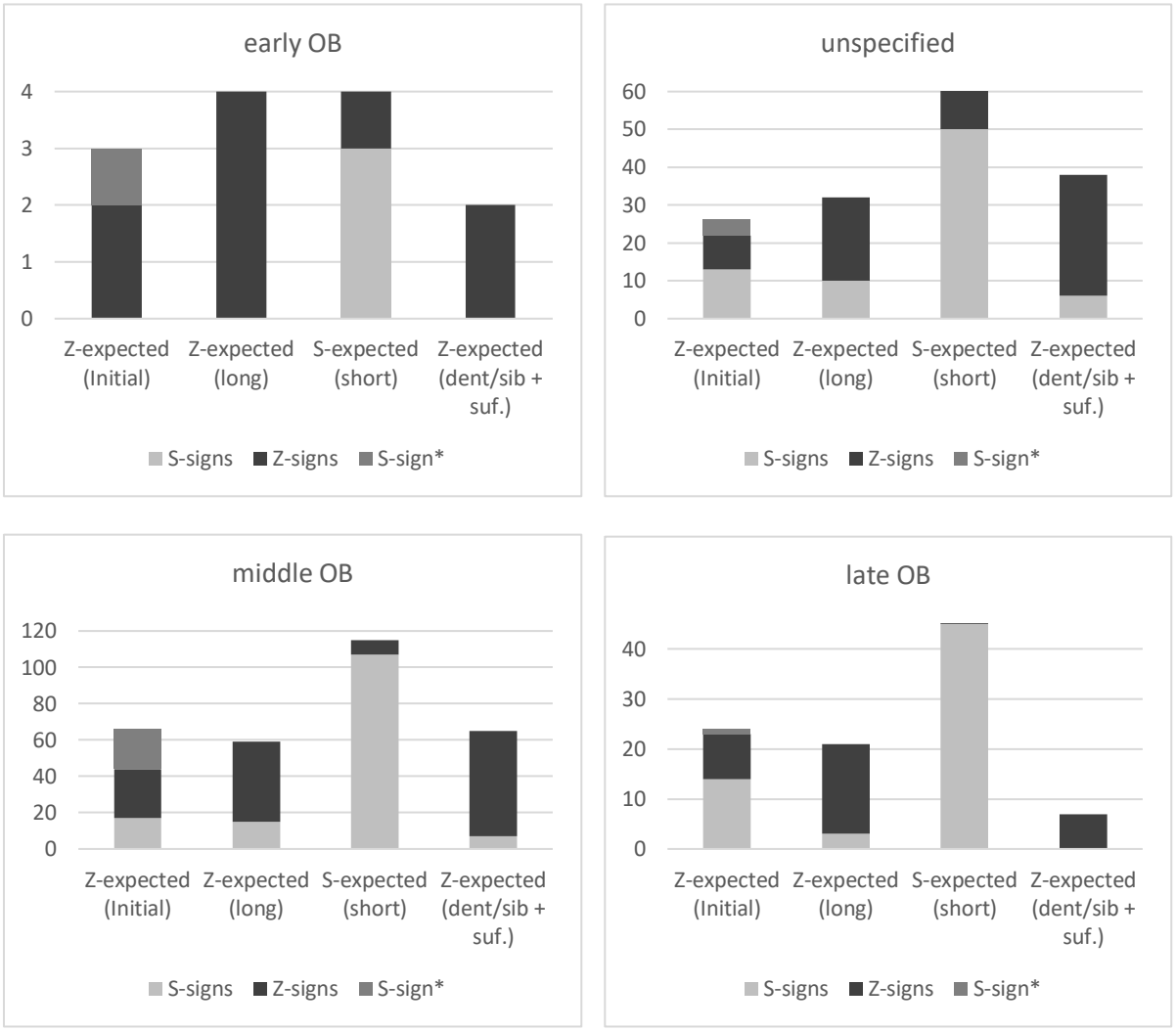
On the opposite side of the scale, Z-spellings constitute the most frequently attested CV signs for the representation of the sibilants resulting from the contact of radical dental(-alveolar) or sibilants (other than /š/) with /š/ from a suffix. This orthographic pattern suggests that a plausible process of lenition of an affricate sibilant /t͡s/ could have been blocked for a longer period in cases where the phoneme was lengthened, especially as a result from coalescence with clitizised /š/. A similar change process is suggested in Westenholz 2006:

> In the texts of Samsu-iluna's time, we see the beginnings of the extension of the development [t͡s] > [s] to initial position and to intervocalic double, except for suffixed forms. (Westenholz 2006, 254).

Focusing on the chronological division of the data into conventional periods, the northern-related letters in ACCOB present the following distribution for the variable (s,z):

[674] See 4.2.2.1, above.
[675] It should be noticed that in the case of the roots SDR and SDD, Streck (2006) proposed instead an internal motivation for the phonological change. See Streck 2006, 224 and comments in 4.2.2.1, above.
[676] Cf. the 56 instances of S-signs in Table 42 with the total of 47 instances of word-initial Z-signs in the northern-related letters in the corpus (in footnote n. 622 in section 4.2.2.1)
[677] This development refers to the deviance from the so-called allophonic pattern. The previous process of deaffrication of non-initial short /s/, accounted for in the allophonic pattern, is excluded from this process.

Figure 32: N. of instances of CV signs for the variable (s,z) in northern-related letters from ACCOB by periods[678].



The first graph, containing data from early OB letters, shows a most prevalent use of Z-signs in all four morpho-phonological scenarios, as it could be expected from the oldest period of OB. However, the number of instances that constitute the evidence can be considered of little significance. A comparison between middle OB data (reigns of Hammurabi and Samsu-iluna) and later texts shows certain temporal increase of S-signs in late letters, but the difference is not statistically relevant[679]. Nevertheless, the quantity of

[678] The data marked as S-sign* correspond to S-spellings belonging to the group of lexical items differentiated in Goetze 1945, 1958 and Streck 2006 (Table 40), with the addition of the forms *sa-da-na-ka-tum* and *sa-da-na-ki.* Instances of the term *Sutû* remain in the unmarked group 'S-sign'. See Tables 42, 43 and 45 for instances of S-spellings and Table 44 for Z-spellings of short /s/.

[679] Late OB letters in ACCOB (referred to in Figure 32) contain the following instances of Z-spellings for the rendering of double /s/ (see also the instances in word-initial /s/ in footone 621 [section 4.2.2.1]): (1) geminated or the result of assimilation with /n/: *li-is-s*[ú-hu-*nim-*ma] (AbB 1, 2:22); *i-si-h*[u]-x (AbB 2, 69:7); [i]*s-sà-an-*[q]*ú-*[n]*i-ik-*[ku-nu-ši-im] (AbB 2, 70:1'); *is-sà-*[n]*i-*[i]*q* (AbB 2, 70:10); *is-sà-an-qú-ni-i*[k-k]*u-nu-š*[i-im] (AbB 2, 71:16); [li]-*sú-hu-*[ni]*m* (AbB 5, 240:6); [i]*s-sà-an-qú-ni-ik-ku-nu-ši-im* (AbB 6, 97:10); *li-is-sú-hu-nim-ma* (AbB 7, 50:19'); *is-sú-ni-iš-šu-ma* (AbB 10, 171:35); *is-sà-an-qú-ni-ik-kum* (AbB 10, 73:13); *ú-us-sà-ʾarʾ* (AbB 11, 102:9); [u]*s-sú-ri-im-ma* (AbB 12, 72:29); *pu-*[ur]-*sa-*[m]*a* (AbB 13, 50:11); *is-sà-an-qú-ni-ik-ku-nu-ši-im* (AbB 13, 51:19); *is-sà-an-qá-ak-ku-nu-ši-im* (AbB 13, 52:12); *i-si-hu* (AbB 13, 52:6); *is-sà-an-qú-ni-ik-kum* (RA 108, 1:10) and *ta-as-sú-uk* (VS 22, 83:11); (2) result of contact

examples attested for each period differs considerably. The data from early and late OB letters collected in the corpus is particularly meagre, which implies that a further addition of data to the these samples or a revision of the text editions used in the study might affect substancially the overall distribution of spellings given by the data gathered in the ACCOB corpus.

In general, the allophonic pattern applies with similar ratios to the three periods analysed, as well as to the group of letters of uncertain chronology. However, except for the poorly attested early OB letters, word-initial S-spellings surpass Z-signs in all subdivisions. It should be noticed, however, that if terms originally borrowed from West-Semitic and Sumerian languages, and other items that have been suggested to have a different phonemic source for /s/ (marked as *S-sign** in Figure 31) were not considered in the survey, the ratio for word-initial /s/ in the middle OB graph would be favourable for Z-signs. The difference would be even more evident if the lexeme *Sutû*, a salient S-spelling in Hammurabi's letters, was also excluded from the comparison.

The temporal variable, therefore, cannot account alone for the range of variation found in norther-related letters in ACCOB. Different outcomes for the variable (s,z) occur within similar periods or even within the letters of individual senders, as the texts from Hammurabi show.

There are two manners in which the allophonic pattern can be unfulfilled. The first one is represented by the instances of Z-signs in an environment where S-signs could be expected. This can only occur in one of the four morpho-phonological scenarios examined in this section: i.e., in non-initial short /s/. This writing practice is related to earlier orthographic practices that go back to Old Akkadian, and has been claimed to represent affricate phonemes as opposed to later fricative articulation of /s/. It has, therefore, a conservative connotation. Such occurrences are only attested in 21 occasions (see Table 44 in 4.2.2.4). The second deviance from the allophonic pattern replaces expected Z-signs for S-spellings, signalling the phonological change that will be completed in Middle Babylonian. These forms imply, therefore, an innovative connotation.

The following subsections analyse the variables associated to both exceptions to the allophonic pattern in northern-related letters in ACCOB, with particular attention to the individual texts and sub-corpora where these exceptions occur.

4.2.2.6.1 Occurrences of Z-spellings in non-initial short /s/

The letters from King Hammurabi contain examples of both 'conservative' and 'innovative' exceptional traits, even though the great bulk of instances of /s/ in CV signs follow the allophonic pattern[680]. However, the allocation of these exceptions within Hammurabi's letters shows that the unexpected features are not regularly distributed in the sample.

The use of Z-signs for non-initial short /s/ in four of Hammurabi's letters is a relevant feature that differentiates these texts from the rest of Hammurabi's correspondence, and ultimately, from most OB northern-related texts[681]. It is also a conservative trait that

/š/ + /š/ from suffix onset: *ri-qú-us-sú* (AbB 5, 267:19); *mar-ṣú-us-sú* (AbB 9, 174:6); *lu-up-qí-is-sú-nu-ti-ma* (AbB 12, 4:16); *ba-la-sú* (MHET 1/1 88:18); *sa-as-sú* (VS 22, 84:18); *iṣ-ba-as-sú-m*[a] (VS 22, 90:4) and *ip-qí-is-sú* (VS 22, 90:6).

[680] See Streck 2006 and Hernáiz in press.

[681] See the 21 instances of this feature found in the corpus in Table 43 (section 4.2.2.4).

contravenes both the allophonic pattern and the subsequent development of the pattern towards a uniform rendering of /s/ by S-signs. Four instances of Z-signs in this position[682] are included in the letters from Hammurabi. One of them, *ka-am-s*[ú]-ʿ*ú*ˀ (AbB 2, 59:8) is uncertain and cannot be confirmed by the copy in LIH II, 75. The form *ú-sú-úh-šu-nu-ti* belongs to the same letter (AbB 5, 136) where another exception to the allophonic pattern exist, namely the Z-spelling of a phoneme resulting from contact between radical /š/ and /š/ from suffix: *tu-še-ep-pé-es-sú-nu-ti* (see section 4.3)[683]. A third exception occurs in letter AbB 4,40 where two different forms co-exist: the expected *ip-ru-su-ma* and again, a conservative form *ip-ru-sú-ma*. What stands out in this letter refers to other orthographic conventions. Thus, this letter contains the only two occurrences (in the whole corpus of letters sent by Hammurabi) where the phonetic complement to the sumerogram A.ŠÀ is written with a CVC sign, or with a sign denoting /l/: A.ŠÀ-*lim* and A.ŠÀ-*li*. These spellings contrasts markedly with more than a hundred occurrences of A.ŠÀ-*um, -im, -i, -ia* or *-am* in the corpus of letters sent by Hammurabi[684].

Two more individuals stand out among the northern senders in the corpus due to their instances of irregular Z-spellings: Šamaš-naṣir (in letters from an archive in the Lower Yahrurum) and Šamaš-hazir (in letters from an archive perhaps located in Kiš). Both individuals had been already mentioned in the section of orthographic variables.

From the orthographic and epigraphic point of view Šamaš-naṣir presents one of the most heterogeneous groups of letters in ACCOB (assuming that all the letters are correctly attributed to the same individual). Some of his letters have been described as displaying Larsa script, while others contain northern features, or even 'assyrianism' (see section 3.3.1.2). Moreover, like the instances in the letters from Hammurabi mentioned above, the correspondence of Šamaš-naṣir was also mentioned in 3.3.2.1 and 3.6.3.2.2 regarding the use of CVC phonetic complements in É.GAL and A.ŠÀ, otherwise infrequent in northern OB letters. However, Šamaš-naṣir's letters also vary considerably concerning the spelling of the variable (s,z)[685]. Interestingly, AbB 14, 70, the letter that contains two of the three 'conservative' occurrences of Z-signs for non-initial short /s/ in Šamaš-naṣir's texts (*i-sà-ki-pa-am* and *na-ah-sà-tim*, see Table 43), is described in AbB 14 as sharing a similar script to letter AbB 14, 68[686], the text where we find the irregular word-initial S-spellings for the term *saddanakkum*[687]. If both letters were indeed written by the same scribe, this might suggest that the phoneme /s/ in the form *saddanakkum* (a term originally borrowed from Sumerian) could have been perceived by the scribe as different from the phoneme /s/ in the examples given above of short internal /s/ (rendered by Z-sings). The other irregular Z-spelling, *na-sà-hu*, occurs in a letter that contains an expected S-sign for a similar context in *na-sa-hi-im* (AbB 14, 218). The inconsistency of Z-spellings in this morpho-phonological scenario is similarly found in letter AbB 4, 40 from Hammurabi.

[682] The form *is-sa-an-qú-ni-ik-kum* from AbB 5,135 was collated as *is-sà-an-qú-ni-ik-kum* in Streck 2006, 223. The form '*ip-pa-al*-ZA-*am*', analysed in Streck 2006, 220 is not included here because it is a fragment of the spelling of personal names.
[683] Unfortunately, the tablet is not available anymore, so the question of whether it was an epigraphic lack of distinction between ZU and SU cannot be answered.
[684] See section 3.6.
[685] Cf. the use of a Z-spelling for *na-ah-sà-tim* in AbB 14, 70:26 against S-signs for doubled /s/ in *ta-ás-su-hu* (AbB 14, 69:22). Both instances are forms of the predicate *nasāhum* 'to tear out'.
[686] Veenhof 2005 (AbB 14), 62, note 70a.
[687] AbB 14, 68:8 and 9'.

The second individual responsible for several instances of 'irregular' Z-signs in northern-related letters in ACCOB is Šamaš-hazir, an owner of date orchards[688] and sender of letters that contain the forms *li-ip-ru-s*[ú]-*ni-ku*[m], *li-ip-ru-sà*-[a]*m, ú-sà-a*[p-p]*a-hu-ma* and *pu-ur-sà*-[m]*a*(?) (see Table 44). Letters issued by the same individual, Šamaš-hazir, were also mentioned in the section on orthographic variables for presenting once again an instance of one of the few cases of CVC phonetic complement (A.ŠÀ-*lim*)[689], otherwise unusual within the northern-related letters in ACCOB. The letters from Šamaš-hazir also form a heterogeneous group in which some texts also include southern orthographies such as the sign *ṭù* in the formula (d)UTU *ù* (d)AMAR.UD *li-ba-al-li-ṭù-ka* (AbB 9, 142:4).

The orthographic peculiarities of some of the letters from Šamaš-naṣir and Šamaš-hazir[690], infrequent among northern-related letters in ACCOB, might suggest certain relationship with scribal practices common in southern-related letters, where, as will be seen in section 4.2.3. irregular Z-spellings are also more frequently attested.

4.2.2.6.2 Occurrences of S-spellings in environments where Z-signs are expected

More frequently attested than the Z-spellings discussed above, instances of S-spellings in word-initial or doubled /s/ are scattered throughout the data from the corpus.

The first occurrence in the northern-related letters in ACCOB comes from an early OB letter: *sa-am-ta-am* (Sumer 23, IM 49253:6). This item is related to the word *sāmum* 'red', one of the forms singled out by Goetze (1945 and 1958) for its consistent use of S-spelling in OB texts. Although most of the cases of S-spellings for expected Z-signs that have been dated in ACCOB occur in letters from the reign of Samsu-iluna onwards, another earlier instance, *wa-ar-ka-su-nu* appears in a text dated to the time of Sin-muballiṭ (RA 53, D 24:9)[691]. Remarkably, this early attestation corresponds to the representation of a sibilant resulting from contact between dental consonant (/t/) and the consonant /š/ from a suffix (-*šunu*), i.e., the morpho-phonological environment that most frequently maintains Z-spellings in the ACCOB corpus.

As commented before, the corpus of letters sent by King Hammurabi contain examples of both 'conservative' and 'innovative' irregular spellings of /s/, even though the great bulk of instances of /s/ in CV signs follow the allophonic pattern. More than one hundred examples of CV syllabograms representing the phoneme /s/ attested in this group of letters conform to the allophonic pattern. By contrast, the exceptional use of S-signs for expected Z-spellings occur only in nine occasions: all of them writings of two lexical terms already mentioned in 4.2.2.1: *sadārum* and *Sutû*. Moreover, these lexemes are consistently rendered by S-signs in Hammurabi's correspondence. However, all the instances of these terms appear in six letters[692] that belong to the sub-group of 15 letters that Hammurabi sent to Mari, which differ in content and form with the other 196 letters in the sample, sent to the southern city of Larsa[693]. Since the terms *sadārum* and *Sutû* are not attested in the letters

[688] See Stol 1981 (AbB 9), 67, note 103a.
[689] AbB 9, 85. This letter is the same text that contains the form *pu-ur-sà*-[m]*a*. The tablet is, however, damaged and the name of the sender is missing. The identification of the sender as Šamaš-hazir suggested by Stol 1981 (AbB 9), 56, note 85a is, therefore, not completely certain.
[690] And perhaps also letter AbB 4,40 from Hammurabi.
[691] For the dating of this letter see Kupper 1959, 20. The reading of the sign SU (and not ZU) is supported by the two horizontal strikes still visible in the tablet.
[692] Notably in ARM 6, 51, a letter that contains four of the exceptional S-spellings.
[693] This difference is studied in a separate paper by R. Hernáiz 'Thus spoke Hammurabi. Lectal traits in Old Babylonian Royal Correspondence' (unpublished).

sent by Hammurabi to Larsa, it is not possible to evaluate whether S-spellings for word-initial /s/ in Hammurabi's correspondence are exclusively dependent on lexical factors, or whether they are also connected in some way with other circumstances regarding the scribal composition of the two distinctive groups of letters.

One of the main samples of late OB data for the variable (s,z) in ACCOB is the group of letters sent by King Ammi-ṣaduqa, although it includes merely 15 tokens for the variable. Despite the quantitative gap, these texts can be compared to the letters of the two best attested kings in Babylon: Hammurabi and Samsu-iluna to assess the increase of occurrences of S-spellings for /s/ in OB letters. It should be noticed that this particular comparison presents a chronological contrast of data from texts that can be categorised into the same group regarding its social characteristics: they share royal status[694]. The potential factor of diastratic variation represented by social variables is, therefore, not expected to affect the different distribution of S- and Z-signs in Figure 33, below.

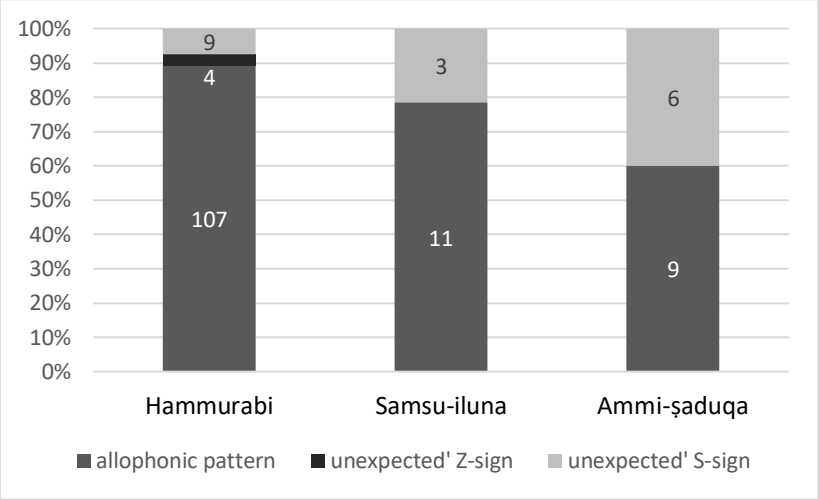


Figure 33: Percentage of CV signs rendering the variable (s,z) in letters from three OB kings.

Although the expected temporal progression towards a preference for S-spellings in CV signs denoting /s/ seems to be supported by the graph, two remarks are in order. First, the comparatively meagre number of attestations for the variable (s,z) in Samsu-iluna's and Ammi-ṣaduqa's letters implies that the different proportions in the distribution of signs from Figure 33 are not statistically robust. Second, it should be noticed that six of the instances of S-signs that do not follow the allophonic pattern in the correspondence of Samsu-iluna and Ammi-ṣaduqa correspond to the terms for ethnic groups *Sutû*[695] and *Samharû*[696], that could have a frequent rendering by S-signs also in middle OB letters (see the S-signs used for the term Sutû in Hammurabi's letters). Nevertheless, S-spellings such as those found in forms of the predicates *sanāqum*[697] and *nasāhum*[698] in Samsu-iluna's and

[694] The letters from the three senders include both Z-signs and S-signs that fit into the allophonic pattern (represented by the dark grey portion of the bars in Figure 32). The segments of the bars labelled 'S-signs' include also the intances of the terms argued to present consistently S-spellings in Goetze 1958 and Streck 2006. These account for nine tokens in the letters from King Hammurabi and one in Ammi-ṣaduqa (see instances in Tables 40-42).
[695] See instances n. 48, 49 and 51 in Table 42, section 4.2.2.2.
[696] See instances n. 4, 5 and 6 in Table 42, section 4.2.2.2.
[697] Instance n. 55 in Table 42, section 4.2.2.2.
[698] Instances n. 13 and 14 in Table 43, section 4.2.2.3.

Ammi-saduqa's letters contrast with the regularity of the number of Z-spellings for similar forms in the letters from Hammurabi[699].

As commented in section 4.2.2.1, the general data from the corpus does not retrieve a significant discrepancy between the middle and the late OB periods in the number of CV signs of the S-series for initial or doubled /s/. This is markedly related to the composition of the corpus and the origin of the texts included in the conventional subdivisions. One of the consequences of working with a geographically and chronologically unbalanced sample of texts is that some sub-divisions of the corpus might include a high proportion of outliers, i.e., elements that differ substantially from the rest of the elements within the group, altering the global description of the characteristics of said group. The effect of internal differences in sub-divisions of the corpus might, therefore, not be immediately apparent but can distort the general distribution of data. In the classification of letters by periods of time, the middle OB sample is the best attested temporal cluster. It comprises a diversity of subgroups that includes fairly regular letters like the royal letters of Hammurabi, which follow the allophonic pattern to a significant extent. However, the senders whose letters present a larger number of irregular S-signs also fall into this group. This makes the overall difference between middle OB data and the data from a later period less prominent.

Thus, the letters of the corpus stemming from the archive of Lagaba, specially the correspondence sent by Belšunu and Marduk-naṣir[700], are the most remarkable collection of S-signs for the spelling of /s/ in different morpho-phonological environments of the northern-related documents from ACCOB. Likewise, a group of letters related to the Lower Yahrurum region also dating to the reign of Samsu-iluna, account for a considerable proportion of the 'irregular' S-signs found in the northern-related letters of the corpus. Figure 34, below, shows all the instances of CV signs denoting /s/ in the letters of Belšunu and Marduk-naṣir of Lagaba and correspondence related to the Lower Yahrurum region at the time of Samsu-iluna[701].

[699] See examples of instances in Streck 2006, 219-224.

[700] See Frankena 1978 for details about these individuals.

[701] For the location of this region around Kiš see Van der Toorn 1995, 370. The senders from this classification based on geographical and temporal similarity that present CV signs for the variable (s,z) are: Annu and Ubarum, Belanum, Etel-pi-Marduk, Gimillum, Ibbi-Sumuqan, Ihbitiya, Inbuša, Lumur-ša-Marduk, Marduk-kašid, Marduk-naṣir, Munawwirum, Nabium-malik, Šamaš-naṣir, Taribatum II and Taribum. See Tables 42-45 and annexe.

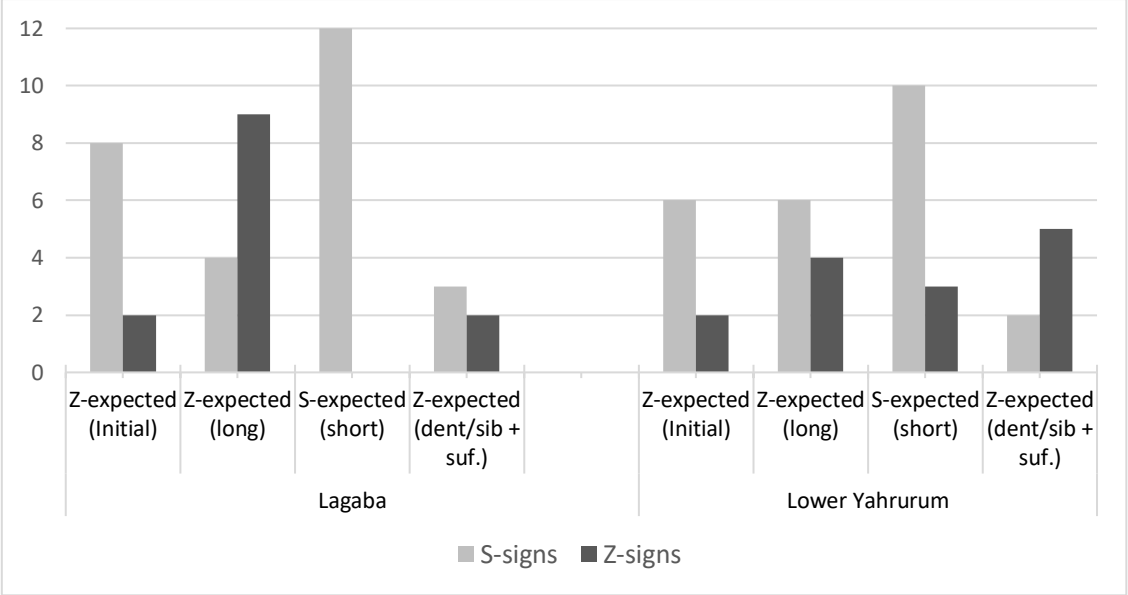


Figure 34: N. of instances of CV signs for the variable (s,z) in the letters from Belšunu and Marduk-naṣir (Lagaba)[702] and from the archive of palm trees in the Lower Yahrurum[703].

The activities and the status of these senders are varied. Belšunu and Marduk-naṣir were members of the same 'house' in Lagaba. The former was an administrator of the house[704] and the latter a *mušaddinum* (tax collector), both in correspondence with their 'brother' Šu-Amurrum, the overseer (*šāpirum*)[705].

[702] Z-spellings for /s/ in the Lagaba letters from Belšunu and Marduk-naṣir: (1) initial: *sí-ka-tim* (AbB 3, 48:29) and *sà-mi-nam*(sar) (AbB 3, 11:42); (2) doubled:); *ta-ša-as-sú* (Abb 3, 11:14); *as-sú-uh*-[k]*a* (AbB 3, 11:7); *i-bi-is-sà-am* (AbB 3, 15:13); *i-bi-is-sà-ki* (AbB 3, 15:14); *ta-as-sà-na-hu-ri* (AbB 3, 15:15); [i-bi-i]*s-sà-am* (AbB 3, 15:23); *ús-sà-an-na-qú* (AbB 3, 16:11); *ús-sà-an-na-qú* (AbB 3, 16:5); *is-sú-ha-nim* (AbB 8, 152:28); (4) in /š+š/: *up-ta-si-is-sí* (AbB 3, 34:14) and *pí-qí-sú-nu-ti* (AbB 8, 152:50).
S-spellings: (1) initial (notice the number of lexemes with SDR root, commented in section 4.2.2.1): *sa-mi-ik-ma* (AbB 3, 11:39); *sa-di-ir-ma* (AbB 3, 11:50); *sa-di-ir* (AbB 3, 12:21); *s*[a]-*a*[d-ra(?)-am(?)] (AbB 3, 35:10); *sa-ad-ra-am* (AbB 3, 35:9); *sa-a*[d]-*ra-am* (AbB 3, 38:40); *si-ka-re-e* (AbB 3, 110:18); *sa-mi-du*-[um] (AbB 3, 110:8); (2) doubled: *ta-na-sa-ah* (Abb 3, 14:10); *up-ta-si-is-sí* (AbB 3, 34:14); *li-im-te-si* (AbB 3, 36:27); [n]*i-ka-ás-si* (AbB 8, 148:25); (3) short /s/: *e-se-ri* (AbB 3, 11:32); *ne-em-se-e-em* (AbB 3, 11:39); *ip-ta-ar-sa* (AbB 3, 11:48); *kam-sa-at* (AbB 3, 34:19); *ti-si-a-ma* (AbB 3, 37:10); *i-si-ih-ti* (AbB 3, 38:39); *me-si-rum* (AbB 3, 39:16); *i-si-ir-ma* (AbB 3, 48:9); *i-si-ih-ti* (AbB 3, 51:21); *ki-si-im-tam* (AbB 3, 110:2); *ka-su-ú* (AbB 3, 110:7); *ta-ta-ak-sa* (AbB 8, 152:36); (4) in /š+š/: *qá-as-su* (AbB 3, 11:31); [tap]-*pu-su* (AbB 3, 49:16) and *wa-ar-ka-su* (AbB 3, 50:18).
[703] Z-spellings for /s/ from letters related to the Lower Yahrurum: (1) initial: sà-ka-pa-am (AbB 14, 70:18) and sí-ik-pa-nim (AbB 14, 70:27); (2) doubled: *ta-ša-as-s*[í] (AbB 8, 134:11); *i-ša-as-sí* (AbB 8, 134:13); *ni-ka-as-sú-šu*-[nu(?)] (AbB 10, 59:14) and *ta-na-sà-ah-šu* (AbB 14, 66:23); (3) in short /s/: *i-sà-ki-pa-am* (AbB 14, 70:21); *na-ah-sà-tim* (AbB 14, 70:26) and *na-sà-hu* (AbB 14, 218:8); (4) in /š+š/: *qá-as-sú* (AbB 3, 82:7); *ṭú-ru-sú-nu-ti* (AbB 6, 81:14); *li-ṣa-bi-sú* (AbB 6, 94:8); *az-zu-as-sú-nu-ši-im* (AbB 9, 92:16) and ÌR-*sú* (AbB 14, 94:3).
S-spellings: (1) initial: *si-ma-ni-šu-nu* (AbB 6, 92:13); *sa-da-na-ka-tum* (AbB 14, 68:8); *sa-da-na-ki* (AbB 14, 68:9'); *sa-bi-i* (AbB 14, 79:14); *sa-bi-i* (AbB 14, 79:9) and *se-bu-ut* (AbB 14, 80:16); (2) doubled: *i-ša-ás-si* (AbB 8, 136:10); [ni-ka-a]*s-s*[i]-*šu-nu* (AbB 10, 59:11); *ta-na-sa-ha* (AbB 10, 183:8); *a-pa-sa-as* (AbB 14, 66:21); *ta-ás-su-hu* (AbB 14, 69:22) and *ta-na-sa-ah-šu* (AbB 14, 69:26); (3) short /s/: *hi-si* (AbB 3, 82:16); *a-si-ri* (AbB 6, 118:22); *te-se-ke-e*[r-m]*a* (AbB 8, 131:7'); *ti-si-it* (AbB 8, 134:9); *i-sa-an-ni-qá-am* (AbB 9, 3:7); *i-sa-a*[n-ni-i]*q* (AbB 10, 59:16); *na-sa-hi-im* (AbB 14, 218:9); *i-sa-ni-a-ti-ma* (AbB 14, 66:6); *mi-ik-sa-at* (AbB 14, 78:11) and *i-pa-ra-su* (AbB 14, 94:11); (4) in /š+š/: *ta-pu-ú-su-ú* (AbB 6, 85:21) and *ša-na-ás-su* (AbB 14, 97:10).
[704] See Frankena 1978, 109: 'Verwaltete des Haus der Familie in Lagaba'.
[705] Ibid.

The heterogeneous collection of texts from the Lower Yahrurum, on the other hand, contains letters that deal with the cultivation and delivery of dates[706]. Among their senders we can identify an administrative official (Etel-pi-Marduk) and a superior of a group of date-growers[707] (Lumur-ša-Marduk). The small size of the sample makes it difficult to establish orthographic or linguistic variances between different members of the archive. However, the letters associated to the region of the Lower Yahrurum during the reign of Samsu-iluna also include the collections of texts from Šamaš-naṣir already mentioned in 4.2.2.6.1 regarding his salient instances of irregular Z-signs of the CV type for the rendering of non-initial short /s/. However, they also include instances of 'irregular' S-spellings. The placement of Šamaš-naṣir into this group is, nonetheless justified by the fact that he addresses his letters to a certain Nur-Šamaš, who was probably based in the Lower Yahrurum and was involved in activities regarding date gardens[708]. On the other hand, it is worth noting that Šamaš-naṣir, an official in the service of the central government for collecting taxes due by date growers ('santana')[709], seems to have been based in Babylon[710]. The heterogeneous spellings attested in different texts from this individual might be associated to different circumstances in the drafting of the letters, including the geographical location at the time of submission of the tablets. In any case, the irregular Z-spellings in letters from Šamaš-naṣir contrast sharply with the characteristics of other epistolary documents related to the archive in the Lower Yahrurum and, if correctly dated, constitutes an illustrative example of synchronic variation in OB letters.

The concentration of 'irregular' S-spellings in letters related to the Lower Yahrurum and Lagaba in the period corresponding to Samsu-iluna, biases the distribution of the variable (s,z) by accounting for more than a third of all cases of 'irregular' S-spelling in norther-related letters from ACCOB.

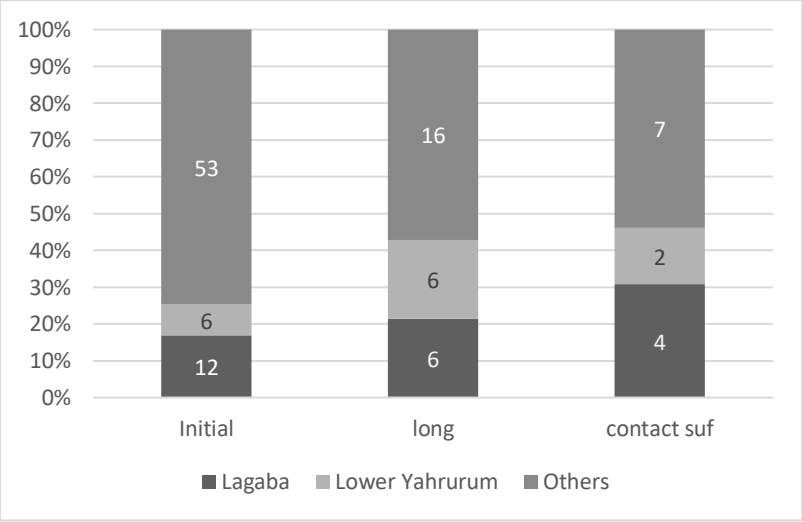


Figure 35: Percentage of all 'irregular' instances of S-signs of CV type in OB letters related to Lagaba, the Lower Yahrurum and the rest of northern-related letters in ACCOB[711].

[706] Veenhof 2005 (AbB 14), xiii.
[707] Ibid., 89, note 97a.
[708] Ibid., xxi: 'Nūr-Šamaš was apparently based in Pi-Kasi, a town situated in "Lower Yahrurum"'.
[709] Ibid., xx with further bibliographical notes. The same title 'santana' applies, however, to Lumur-ša-Marduk.
[710] Ibid., xx-xxi.
[711] The instances on the left bar of the graph include occurrences of initial /s/ in the particular lexemes observed in Goetze (1945 and 1958) and Streck (2006) to be spelled consistently by S-signs.

Therefore, it could be argued that a chronological factor correlate with the distribution of the variable (s,z) in the corpus. Thus, later texts are associated to a certain degree with the increase of 'irregular' S-spellings and the decrease of 'irregular' Z-spellings that do not conform to the allophonic pattern. However, other synchronic factors interact with this temporal element and are relevant for explaining the variation in OB northern-related letters in the corpus.

4.2.3 South

The orthography of sibilant consonants from southern OB documents constitute a central issue in the assessment of the orthographic and linguistic behaviour of the conventional phonemic abstraction /s/ in OB[712]. The group of letters related to southern Mesopotamia in the corpus ACCOB contains texts associated to many different locations, although most of them are related to the city and region of Larsa. The time span covered by the texts includes early OB letters, particularly from the sites of Lagaš and Kisurra (see section on orthographic variables), and middle OB letters. However, no OB documentation from southern Mesopotamia has been recovered after the year Samsu-iluna 11, so every general reference to the sub-corpus of southern-related letters in ACCOB is concerned only with early and middle stages of OB.

As noted before, the observations of different spellings for /s/ in OB texts made by Goetze (1945 and 1958) led him to propose a clear-cut North-South dialectal division by which Z-signs where characteristic of southern regions and S-signs were an idiosyncratic feature of the North. The lexical items consistently rendered by S-signs listed in Table 40 (section 4.2.2.1), constitute, according to this view, the only exception to this pattern in the South, whilst in the North these terms would have remained indistinguishable from other instances of /s/, due to the alleged practice of S-spellings in northern Mesopotamia. However, as discussed in section 4.2.2 and, previously, in studies such as Sommerfeld 1995 and Streck 2006, the northern realization of the pattern suggested by Goetze cannot be proven to feature typically S-signs. It rather entails the representation of an allophonic pattern that combines Z- and S-signs according to morpho-phonological circumstances. Subsequent general descriptions of OB grammar and phonology normally take the allophonic pattern as the standard characteristic of OB texts[713], even though it is acknowledged that OB is a period of change towards S-spellings due to an evolving process of spirantization of /s/, originally an affricate phoneme.

Nevertheless, the whole collection of southern-related letters in ACCOB do manifest a clear different distribution of Z- and S-signs for the variable (s,z) compared to the group of norther-related letters (cf. Figure 27).

[712] See Kogan and Markina 2006, 569, note 29.
[713] See, e.g., GAG 1995 or Streck 2014.

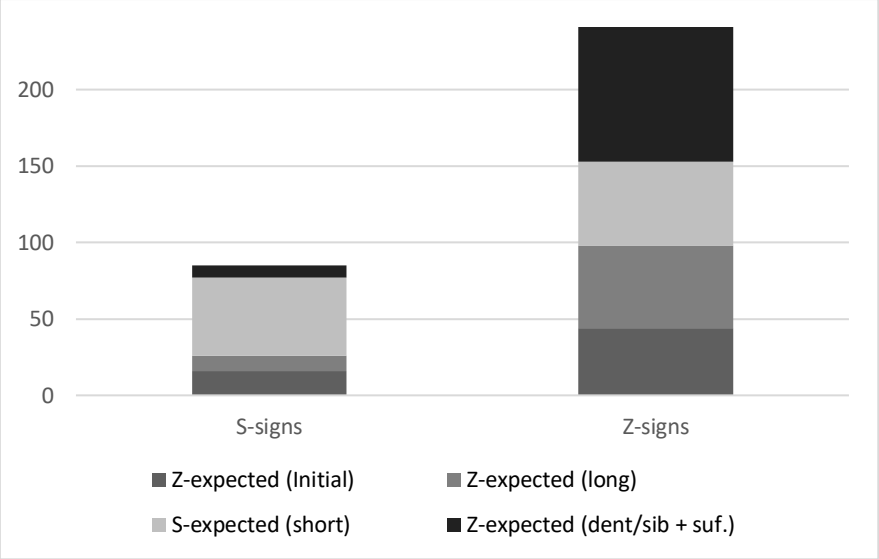


Figure 36: N. of instances of CV signs for the variable (s,z) in southern related letters from ACCOB[714].

Figure 36 shows that, unlike the northern group, the letters related to the South attested in ACCOB represent /s/ more frequently with Z-signs in the four different morpho-phonological circumstances. However, it can be also observed that when S-signs occur, they appear most frequently in the representation of non-initial short /s/, which means that, to a certain extent, the orthography of the southern group cannot be distinguished from what is predicted by the allophonic pattern. In this regard, the graph shows that 'irregular' S-spellings for doubled /s/ and the phoneme resulting from contact between radical dental(-alveolar) or sibilant (other than /š/) and /š/ are very rare among the southern-related letters. On the other hand, word-initial S-spellings, while less frequent than Z-spellings, do appear to have a greater relevance within the data.

It should be noted, however, that the group of southern-related letters is represented exclusively by texts dating to the early and middle OB periods. The influence of lexical and chronological constraints for this distribution will be analysed in the following sections.

4.2.3.1 Occurrences of S-spellings in word-initial /s/

The following table lists the 'irregular' occurrences of word-initial /s/ rendered by S-spellings in the sub-corpus of southern-related letters in ACCOB.

Table 46: S-spellings in word-initial /s/ in southern-related texts in ACCOB.

N.	Form	Letter	Sender	Period
1	*sa-an-ku-ut-ti*	AbB 14, 173:21	Balmunahme	RS

[714] Instances of uncertain CV signs for /s/ not included in the graphic are: ˹*i*˺-[s]*à*-[n]*i-iq* (AbB 9, 129:2'); ˹*sú*(?)-*ur*(?)-*ru*(?)˺-*ú* (AbB 8, 90:6); [(x)]-˹*ú*˺-*sé-li* (AbB 9, 55:9); [is-s]*í* (ABIM 11:20); <*pu*>-*us-sú* (FAOS 2, 149:8); DI *a* AH *sú ú* (AbB 11, 186:6); DU *a* AH *su* (AbB 11, 186:18); *i-ki-is-sú*(?)-*ma* (BaM 2, p.54, iii:23); *ni-ik-ka*-[as]-[s]*i-ni* (UET 5, 56:11); *ni-ik-ka-s*[i-ni] (UET 5, 56:13); *nu-úh*-[hi(?)]-*sú*(?) (AbB 14, 204:38); *ra sa* (AbB 4, 142:14); *s*[u-u]*n-ni-iq-šu*(?)-ma (Abb 11, 135:21); *sà* (AbB 11, 29:13); *sa na*-x (AbB 11, 12:9); *sí*(?)-*mi*-˹*il*(?)˺-*tim* (AbB 8, 90:5); *si*?-*li*? (ABIM 20:77); *si*-x (AbB 11, 1:20); *sú* (AbB 11, 175:16); *šu-pi-il*$_5$*-su* (ABIM 20:56); *su*-x (AbB 12, 78:14); *ú su ú hi* (AbB 9, 207:8); UH-*ta-na*-AZ-*s*[i](?) (AbB 4, 58:15); *x-sa-ma* (AbB 11, 183:25); *x-sú-ti-ma* (AbB 10, 57:11). Other instances for /s/ not rendered by S- or Z-signs are also excluded (e.g., *ta-ap-ru-si*$_{20}$ (AbB 14, 110:32).

2	*sa-d*[u-up-ta]-*am* [715]	AbB 14, 111:9	Rim-Sin-[..]-šu	RS
3	*sa-du-up-tim*	AbB 14, 111:25	Rim-Sin-[..]-šu	RS
4	*sa-li-mi-im*	BaM 2, p.54, iv:17	Anam	Sin-mu
5	*sa-ma-di*	AbB 14, 162:11	Šamasš-hazir	Ha
6	*si-ki-il-tim*	AbB 4, 111:13	Lu-Ninurta	Ha
7	*si-it-ti*	AbB 14, 112:18	Ahum-waqar	unspecified
8	*si-it-ti*	AbB 9, 200:13	Lu-Ninurta	Ha
9	*su-ga-a-am*	RA 95, pp. 93-94:10	Awiyatum	unspecified
10	SU-*h*[a-r]*i-ka*	AbB 9, 259:18	Bulalum	early
11	SU-*ha-ri-im*	AbB 9, 48:21	Šep-Sin II	Ha
12	*su-ku-ru-ú*[716]	AbB 9, 227:13	Ikun-pi-Sin	early
13	*Su-ti-i*	AbB 14, 112:10	Ahum-waqar	unspecified
14	*su-ul-li-ma*	AbB 2, 118:19	Ahum	early
15	*su-un-nu-qá-a-*ˀ*ku*ˀ [717]	UET 5, 52:16	Šamaš-naṣir	unspecified
16	*su*(!)-*un-ni-iq*	UET 5, 23:7	Imgur-Sin	unspecified

The comparatively few cases of word-initial S-spelling present several peculiarities.

- Instances number four and 14 correspond to the predicate *salāmum*, identified by Goetze (1958) and Streck (2006) as one of the lexical items with consistent S-spelling in OB. The forms seven and eight in the table (from *šittum* 'remainder, rest' [718]) were also included in this special group of lexical items by Goetze (1945)[719].
- The form *sa-an-ku-ut-ti* (instance number one) is probably a loanword from Sumerian (SAG.KUD). This would match the assumption that Sumerian loanwords could have incorporated a phonologically distinctive sibilant into OB, perceived (at least in certain OB speech communities) as a different sound from other instances of |s*|. Thus, CV clusters with this phoneme would have been spelled with S-signs in contrast to the usual Z-signs for |s*| in circumstances such as word-initial position.
- The lexeme rendered by n. 10 and 11 is *ṣuhārum* 'boy, servant'. Since S-signs of the type CV do not normally represent /ṣ/ in OB texts, the abnormal spellings of instances n. 10 and 11 could be argued to derive from the graphic similarity of the signs SU and ZU (See Stol 1981 [AbB 9], 158 note 259a). It should be noticed, however, that both of the signs SU in the rendering of *ṣuhārum* are clearly written in the copies (YOS 2 and YNER 4) and highlighted in uppercase in the edition of the letters (AbB 9) as a salient feature rather than an unsure reading. Moreover, they occur in a text from the correspondence of Šep-Sin and in a letter from the archive of Lu-igisa. The latter belongs to an early OB archive characterized for using Z-signs for /s/ in all environments; regarding the former, the correspondence of Šep-Sin, also contains only Z-signs, but they amount to merely three instances. This

[715] For this form, see Veenhof 2005: 'Since collation confirms a reading SA of the first sign, we seem to have here an unknown adjective used as a negative qualification of sheep' (Veenhof 2005 [AbB 14], 216).
[716] Form of *sekērum*. The copy in BIN 7, 40 presents the two horizontal strikes proper of the sign SU.
[717] The sign in the copy (UET 5) resembles a sign ŠU.
[718] It should be noticed that the entry of this term in Akkadian dictionaries often includes both forms *šittum* and *sittum*. See comments to Table 40 in section 4.2.2.1 (footnote n. 629).
[719] The term also occurs spelled with S-signs in northern-related letters in section 4.2.2.1, however these letters are only tentatively associated to the archive of Kiš, and at least one of them (AbB 10, 8) presents further typical southern features. See footnote n. 644 in section 4.2.2.1.

indicates that S-signs might be, nevertheless, infrequent for the representation of /s/ in these letters, which makes the spelling SU in *ṣuhārum* an even more a striking feature. Furthermore, the corpus of southern-related letters in ACCOB includes two other potential cases of instances that show a sign SI replacing the expected sign ZI for the rendering of /ṣi/: UH-*ta*-*na*-AZ-*s*[i](?) (AbB 4, 58:15) in a letter from Lu-Ninurta[720]; and *mi*-*si*-*is*-*s*[ú] (ABIM 1, 28:26), a form followed by a parallel *mi*-*ṣi*-*is*-*sú* (ABIM 1, 28:28, also a southern-related letter)[721]. Although the data is meagre and fragmentary, and therefore, by no means conclusive, it suggests the possibility that a certain interchange between what we normalize in modern editions of OB texts as /ṣ/ and /s/ could have existed in the perception of certain southern OB individuals.

- Finally, another example of the term *Sutû* spelled with the sign SU occurs in the list, in a letter related to the site of Ur. The same spelling feature was already found in letters, such as the correspondence of Hammurabi, that otherwise follow to a great extent the allophonic pattern. Therefore, the fact that the S-spelling for *Sutû* also stands out in southern letters, where S-signs are more strongly restricted to non-initial short /s/ and, allegedly, less affected by deaffrication of word-initial /s/, supports the suggestion that the initial sibilants *Sutû* might have been often perceived as containing a similar phonetic trait as other lexeme that consistently occur with S-signs in OB texts, as remarked by Goetze (1945 and 1958) and Streck (2006)[722].

The rest of the cases of 'irregular' word-initial S-spelling are not always clearly preserved (see instances n. 15 and 16). Three occurrences, however, remain as the most distinctive cases where a phonological change towards deaffrication can be argued to motivate the 'irregular' orthography: one occurs in an early OB letter from Lagaš: *su*-*ku*-*ru*-*ú*. The other two belong to letters from Hammurabi's officials Šamaš-hazir and Lu-Ninurta. As mentioned in the previous chapter, the letters from Lu-Ninurta present both northern and southern traits, with some letters comprising a larger proportion of features frequently found in either northern- or southern-related OB texts. The 'irregular' S-spelling in *si*-*ki*-*il*-*tim* (n. six) occurs precisely in letter AbB 4, 111, one of the documents in Lu-Ninurta's correspondence that features consistent northern-like elements: *ṭú*, *pí* (four times), *ṭe₄* or the form *šuāti*[723]. Moreover, one of the very few occurrences of S-spellings in the representation of the resulting phoneme from contact between radical dental and /š/ from a pronominal suffix within the southern letters (SIKI.BA-*su*[724]) occurs in another letter from Lu-Ninurta: AbB 4, 54. Remarkably, this letter is also salient among Lu-Ninurta's

[720] See the comments by Kraus (1968): 'Der Vermutung Thureau-Dangins, S. 45 Anm. 1, folgend versuchsweise von *hāšu* B, CAD H, S.145 rechts f., abgeleitet, vgl. AHw, S. 335 links, *hâšu*(m) l, D. Ein anderer unsichrer Vorschlag dort, S. 339 rechts unter *haz/ṣum* II Gtn; die Reste des letzten Zeichens nach K aber eher von SI als von ZI (oder ṢI).' (Kraus 1968 [AbB 4], 41, note 58b).
See further a comment by M. Béranger with further bibliography in Archibab: 'Ligne 15: il s'agit du verbe *huṣṣum* (H'Ṣ).' (http://www.archibab.fr/4DCGI/listestextes3.htm?WebUniqueID=1270767 [accessed 01.07.2017]).

[721] Both understood as a form of *miṣītum* 'equivalent' with a pronominal suffix. Al-Zeebari (1964) explains: 'In Z.28 findet sich die korrekte Schreibung, in Z.26 dagegen fehlerhaft si für ṣi' (Al-Zeebari 1964, 80).

[722] However, a counterexample also occurs in the corpus: *Sú*-*ti*-*i*-*im* (AbB 9, 6:5), in a letter from the archive of Sin-iddinam.

[723] Cf. Table 24 in section 3.4.2.1.4. with orthographic variation within Lu-Ninurta's letters.

[724] AbB 4, 54:8. It is assumed here that the logogram represents a plural form of *lubuštum*.

correspondence due to its northern orthographic traits: *pí* and VC complement for A.ŠÀ[725]. Similarly, the form *sa-ma-di* (n. five) appears in a letter by Šamaš-hazir that includes a sign TU in the greeting formula (*li-ba-al-li-ṭú-ki*[726]), and both a CVC and a CV complementing the logogram A.ŠÀ[727].

This first account of 'irregular' S-spellings in southern-related letters, therefore, collects a series of instances that consists mostly of lexical items that had been observed to reflect a particular orthographic (and phonetic) behaviour by scholars like Goetze[728], Streck and Westenholz. Crucially, none of these particular terms occur written with Z-spellings in the southern-related letters in ACCOB which supports previous assumptions about the particular status of the sibilants in a number of lexemes such as those derived from the root SLM. Further examples of word-initial S-spellings occurring in other lexemes are in some cases associated to letters that, despite belonging to the southern group, present also some traits most frequently found in northern-related letters, such as the VC spelling of the phonetic complement A.ŠÀ-*am* (see section 3.6).

4.2.3.1 Occurrences of S-spellings in long /s/

Table 47 lists the only 10 occurrences of S-spellings for long /s/ (geminated or the result of contact between /n/ and /s/) in the letters classified into the southern-related group of texts in ACCOB.

Table 47: S-spellings in CV long /s/ in southern-related texts from ACCOB.

N.	Form	Letter	Sender	Period
1	*ta-su-hi*[729]	AbB 5, 10:5'	Kambaṣum	RS
2	*ni-ka-s*[a]-*am*	AbB 11, 183:19	Munawwirum III	Ha
3	*a-su-re-e-[m]a*	UET 5, 66:14'	Na-[…]	unspecified
4	*ni$_5$-ka-si-ia*	ABIM 1, 11: 15	[…]-rabi	unspecified
5	*bu-ús*-[s]*u-ri-im*	AbB 10, 185:5	Balmunahme	RS
6	*ʿú ʾ-he-su-ú*[730]	FAOS 2, 153:8	Ibni-šadum	early
7	*ta-ša-ás-si*	UET 5, 64:11	Ili-u-Šamaš	Ha[731]
8	*ta-sa-ás-si*	UET 5, 26:20	Išum-ibinišu	Si
9	*ta-ša-ás-si*	UET 5, 26:31	Išum-ibinišu	Si
10	*tu-uš-ta-ás-si*	UET 5, 26:25	Išum-ibinišu	Si

[725] This can be contrasted with the opposite occurrence of a 'irregular' Z-spelling in a salient letter among Hammurabi's correspondence where a CVC sign is employed for complementing the logogram A.ŠÀ (see 4.2.2.5.1, above).
[726] AbB 14, 162:4.
[727] A.ŠÀ-*im* (AbB 14, 162:5), A.ŠÀ-*lam* (AbB 14, 162:16).
[728] The predicate *šasûm*, included in the same group in Goetze 1945 and 1958 has not been considered as having the same characteristics. See Westenholz 2006, 254, note 7 for 'contradictory evidence' about Goetze's claim, and the conclusions in Sommerfeld 2006: 'bei Bildungen zum Verbum *šasûm* mit geminiertem mittleren Radikal die Konsonantenlängung ohne Lautveränderung (also /išassi/ usw.) die Regel war, aber gelegentlich auch eine geschärfte Aussprache als Affricate vorkam (also /išatssi/).' (Sommerfeld 2006, 370).
[729] Interpreted as a form of the predicate *nasāhum* 'to tear up' in AbB 5.
[730] J. Westenholz (1983) makes the remark: "As for [ú]-*he-su-ú*, perhaps it is a case of scribal or modern copyist's error, since the signs ZU and SU are very similar in appearance" (J. Westenholz 1983 [JNES 42], 225).
[731] On a fragment of the case sticking to the tablet there is a seal reading: ÌR *Ha-am-mu*-[…].

The second instance in the table corresponds to a letter of uncertain provenance, tentatively included in the southern-related group after the general classification of some OB letters in Sallaberger 1999, 35. However, while the orthography of the letter does not include any example of distinct southern traits, it contains yet another of the instances of the VC complement signs A.ŠÀ-*im* (see section 3.6).

The form *bu-ús*-[s]*u-ri-im* (instance n. five) relates to one of the lexemes marked as consistently rendered by S-signs by Goetze (1958)[732]: *bussurtum* '(bringing of) good news' (see Table 40 in section 4.2.2.1).

4.2.3.2 Occurrences of S-spellings for contact between dental/sibilant and /š/ from a pronominal suffix

The table below shows the rare instances in southern-related letters of S-signs rendering the sibilant that results from a contact between dental(-alveolar) or a sibilant (other than /š/) and /š/ from a pronominal suffix.

Table 48: S-spellings in CV signs rendering contact of radical dental(-alveolar) or sibilant (other than /š/) with /š/ from pronominal suffixes in southern-related texts from ACCOB.

N.	Form	Letter	Sender	Period
1	*li-ip-qí-su-nu-ti*	AbB 14, 88:25	Dadaya	unspecified
2	*re-qú-su-nu*	UET 5, 81:25	Nanni	unspecified
3	*šu-uk-bi-is-su-ú-ma*	ABIM 20:17	Ṣilli-šamaš II	RS
4	*šu-uk-bi-su-ma*	ABIM 20:25	Ṣilli-šamaš II	RS
5	*ap-qí-is-su*[733]	AbB 11, 23:3'	Utu-mandu	unspecified
6	SIKI.BA-*su*	AbB 4, 54:8	Lu-Ninurta	Ha
7	*re-qù-us-su*[734]	AbB 11, 153:20	Sin-magir III	Ha[735]
8	*mi-ki-is-su-ú*	UET 5, 30:26	Nabi-Enlil	unspecified

The instances number three and (probably) number four are interpreted to be Š-stem forms of the predicate *kabāsum* ('to tread') in contact with a pronominal suffix *-šu* (see entry in CAD vol. 8 [K], 11d). The S-sign of both forms contrast sharply with the writing of the word that precedes them in the text: *nikkassum*, rendered by Z-signs in both cases, as well as in lines 41 and 43, 47, 49, 51, 55 and 56 of the same text[736]. In a similar way, the form of *miksum* 'tax' in instance number eight of the table seems to occur with a possessive pronoun suffix *-šu* and rendered by an unexpected S-sign. If the reading of these forms is correct, the contact between radical sibilant /s/ from a lexeme and an onset phoneme /š/ from a suffix would be, in these cases, rendered by S-signs instead of by Z-signs. The fact that this occurs in southern letters that cannot be dated to a late OB period prevents an explanation based on a late deaffrication affecting all instances of /s/. By contrast, Z-signs

[732] Goetze 1958, 140.
[733] Reading confirmed by Stol (1986): 'SU, not ZU' (Stol 1986 [AbB 11], 14, note 23d).
[734] The sign in the tablet resembles ZU.
[735] The addressee of this letter is also the addressee in AbB 11, 156, a letter which contains a seal reading: ÌR *Ha-am-mu-r*[a-bi].
[736] Cf. also the 'regular' *ki-si-i-ni* in line 73.

occur many times for the rendering of long /s/ in the same text where *šu-uk-bi-is-su-ú-ma* and *šu-uk-bi-su-ma* are attested. Unfortunately, these three cases are the only examples of contact /s/+/š/ found in southern-related texts from ACCOB, so it is not possible to assess whether these spellings are anecdotal cases, misreadings or rather salient traits regarding contact /s/+/š/. Northern-related texts from ACCOB, however, present the alternative (expected) Z-spelling in a letter from Hammurabi (*mi-ki-is-sú*, AbB 4, 96:16), and in a letter sent by Belšunu, in the archive of Lagaba (*up-ta-si-is-sí*, AbB 3, 34:14). Two more examples of other OB documents are given in Streck 2006, 231.

4.2.3.3 Occurrences of S-spellings for non-initial short /s/.

Unlike the groups of letters related to the North and to Diyala region, southern-related letters in ACCOB present frequent Z-spellings for non-initial short /s/. In fact, the southern-related data from the corpus remarkably contains slightly more cases of Z-spellings in this morpho-phonological context (55 tokens) than the 'regular' S-spellings for CV syllabograms in non-initial short /s/ (51 tokens).

The table below lists all the instances of S-spelling in the southern sub-corpus, i.e., the cases of non-initial short /s/ with a spelling that conforms to the allophonic pattern.

Table 49: N. of instances of CV S-signs in southern-related letters in ACCOB for non-initial short /s/.

N.	Form	Letter	Sender	Period
1	[h]*u-mu-sa*	AbB 11, 142:10	Mari-erṣetim	unspecified
2	[k]*i-si-ia*	UET 5, 66:10	Na-[…]	unspecified
3	[t]*a-s*[a]-A[G]	AbB 11, 154:12	Šamuhtum	unspecified
4	*a-sa-an-ni-qá-am*	AbB 1, 109:31	Unknown	Ha
5	*a-sa-li-im*	W 19900, 147:4	Unknown	Ilum-gamil
6	*a-sa-ni-qù*	AbB 5, 159:15'	Imgur-Sin	unspecified
7	*at-ta-an-sa-ak*	AbB 14, 205:12	Sin-eribam	Si
8	*bi-si-le-e-tim*	AbB 14, 219:11	Qištum	unspecified
9	*er-sa-a-m*[a]	AbB 11, 9:3'	Nanna-šalasu	unspecified
10	*e-si-ih-ma*	AbB 10, 32:32	Unknown	Ha
11	*gu-sa-lu*(?)*-tum*	UET 5, 8:15	Appa	unspecified
12	*im-ku-s*[u-ma]	AbB 13, 4:12'	Ibni-Amurrum	Ha
13	*i-sa-am-mu-ʿdu*ʾ	AbB 11, 26:8	Lu-Ninsianna	unspecified
14	*i-sa-an-ni-qá-am*	AbB 3, 24:10	Šamaš-muballiṭ	Ha-Si
15	*i-se-eh-ta-šu*	AbB 11, 133:29	Ilšu-ibnišu	Ha
16	*i-si-ha-an-ni*	AbB 13, 4:15'	Ibni-Amurrum	Ha
17	*ì-si-ha-an-ni-a-š*[i-i]*m*	AbB 13, 6:5	[…]-ilum	Ha-Si
18	*i-si-im*	AbB 5, 157:26	Unknown	RS
19	*i-si-ra-an-ni*	AbB 14, 206:12	Warad-Gula	unspecified
20	*ka-sa-ap-šu*	FAOS 2, 149:9	Ṣilli-aba	early
21	*ki-sa-am*	ABIM 1, 20:5	Ṣilli-šamaš II	RS
22	*ki-sa-li-ia*	UET 5, 81:49	Nanni	unspecified
23	*ki-si*	UET 5, 66:10	Na-[…]	unspecified
24	*ki-si*	UET 5, 81:42	Nanni	unspecified
25	*ki-si*	UET 5, 81:44	Nanni	unspecified

26	*ki-si-ia*	UET 5, 81:20	Nanni	unspecified
27	*ki-si-i-ni*	ABIM 1, 20:73	Ṣilli-šamaš II	RS
28	*ku-si-a-šu*	AbB 5, 160:3	Etel-pi-Sin	unspecified
29	*li-i*[p-p]*i-s*[u]*-ú-šu*	AbB 8, 14:10'	Rim-Sin-Enlil-kurgalani	RS
30	*li-ip-ru-su*	AbB 9, 237:15	Gimil-Gula	unspecified
31	*li-ir-pi-su-ú-ma*	AbB 11, 142:12	Mari-erṣetim	unspecified
32	*ma-ka-sa-am*	AbB 13, 4:7'	Ibni-Amurrum	Ha
33	*mi-ik-sa-at*	AbB 13, 4:19'	Ibni-Amurrum	Ha
34	*mu-su-ku-ú*	UET 5, 34:10	Nuṭṭubtum	unspecified
35	*mu-su-ku-ú*	UET 5, 34:14	Nuṭṭubtum	unspecified
36	*na-ak-sa-at*	AbB 4, 111:13	Lu-Ninurta	Ha
37	*na-si-ih-ta-am*	UET 5, 81:53	Nanni	unspecified
38	*pi-si-il-ti*	AbB 11, 185:20	Sin-magir	Ha
39	*pur-sa-*[ma]	AbB 11, 159:21	mayor and elders Isin	unspecified
40	*ri-ik-si*	AbB 5, 171:10	Naramtum (f)	unspecified
41	*ri-si-ib-tim*	RA 102, 1:10	Kurgal-amahani	RS
42	*ši-si*	AbB 4, 119:6	Lu-Ninurta	Ha
43	*ta-sa-ah-hu-ra*	AbB 14, 205:23	Sin-eribam	Si
44	*te-si-am-ma*	AbB 10, 209:11	Unknown II	unspecified
45	*ti-si*	AbB 11, 160:34	Kurum	unspecified
46	*ti-si-šu-ma*	AbB 14, 204:38	Dada	Si
47	*tu-ka-am-ma-s*[a]	AbB 13, 44:18	mayor of Atašum	Ha
48	*tu-sa-ba-al*	Abb 11, 6:12	Naram-Sin	Ha
49	*ú-ʾdaʾ-a*[r]*-r*[i]*-s*[a]*-an-ni-ma*	AbB 13, 119:9	Nanna-tum	Ha
50	*ú-sa-tum*	AbB 1, 8:20	Dada	Si
51	*ʾúʾ-su-uq*	AbB 11, 13:26	Ur-Šuzianna	unspecified

However, the salient characteristic that differentiates the southern-related letters in the ACCOB corpus is the relatively frequent occurrence of CV graphemes of the Z-series to render short /s/ in non-initial position (contra allophonic pattern's spellings). Table 50, below, presents a list with all the possible cases of Z-signs for non-initial short /s/ in the southern-related texts of the corpus.

Table 50: N. of instances of Z-signs of CV type in southern-related letters from ACCOB for non-initial short /s/.

N.	**Form**	**Letter**	**Sender**	**Period**
1	*a-k*[a]*-mi-sà-*[am]	ABIM 28:17	Awil-Šamaš	RS
2	*a-pa-ra-sà-ʾam-maʾ*	FAOS 2, 173:13	Sin-magir	early
3	*a-sà-kà-kà*[737]	FAOS 2, 174:11	Šeš-pa-tuku	early
4	*a-sà-kam*	AbB 14, 9:3"	Ur-Namše	unspecified
5	*aš-ta-sí-ma*[738]	AbB 8, 108:5	Saggarum	early

[737] It should be noticed that the term *asakkum* 'taboo' is related to *asakkum* 'asakkum-demon', also rendered with Š-signs (*ašakkum*) in Akkadian texts.

[738] The form is taken to be a G-stem perfect form of the predicate *šasûm* 'to shout, call, read' (see the translation 'Deine gesielgete Urkunde habe ich gelesen' in Cagni 1980 [AbB 8], 73). A Gtn preterite form, however, would imply doubled /s/.

6	*er*(!)*-sú*	YOS 15, 67:4	Ṣilli-Šamaš	RS
7	*er-sú*	AbB 14, 58:9	Ṣilli-Šamaš	RS
8	*er-sú-ú*	AbB 14, 60:14	Ṣilli-Šamaš	RS
9	*ha-sí-is*	AbB 14, 144:28	Ili-iddinam	unspecified
10	*ha-sí-is*	AbB 14, 144:29	Ili-iddinam	unspecified
11	*i-da-ri-sú-šu-nu-ti*	AbB 11, 152:19	Unknown IX	Ha
12	*ih-ha-sí-ir*	BaM 2, p.54, iii:14	Anam	Sin-mu
13	*ih-ha-sí-is*[739]	AbB 14, 144:23	Ili-iddinam	unspecified
14/15	*ih-sú-sà-ku-uš-šu*	AbB 14, 144:30	Ili-iddinam	unspecified
16	*ih-sú-us*	AbB 14, 144:8	Ili-iddinam	unspecified
17	*ih-sú-us*	AbB 14, 144:9	Ili-iddinam	unspecified
18	*ih-sú-us*	AbB 14, 144:12	Ili-iddinam	unspecified
19	*i-pa*-[r]*a-sà-am*	FAOS 2, 154:39	Ibni-šadum	early
20	*ip-pa-ar-sú*	AbB 14, 209:5	Unknown	unspecified
21	*ip-ru-sú-n*[i]*m*(?)	AbB 9, 221:6	Lu-igisa	early
22	*ip-ru-sú-ni-im-ma*	AbB 10, 177:22	Ṣilli-Šamaš	RS
23	*i-sà-*<ki>*-pu*	AbB 11, 152:22	Unknown IX	Ha
24	*i-sà-aḫ-ḫu-ra-ak-kum*	ABIM 26:18'	Rim-Sin-Enlil-kurgalani	RS
25	*i-sà-ah-hu-ru*	BaM 2, p.54, iv:10	Anam	Sin-mu
26	*i-sà-an-ni-iq*	AbB 14, 11:6	Damqi-ilišu	Si
27	*i-sà-ki-pu-šu-nu-ti*	AbB 11, 152:23	Unknown IX	Ha
28	*ki-sà-li*	HE 107:11	Mar-erṣetim	Ha
29	*ki-sí-ku-nu*	AbB 9, 134:17	Šep-Sin II	Ha
30	*ku-sà-šu-ma*	UET 5, 64:7	Ili-u-Šamaš	Ha
31	*li-ik-ta-sí-pu*	AUWA 23, 82:6	Unknown VIII	RS
32	*li-iš-te-er-sú*	AbB 14, 129:11	Ipi-Adad	unspecified
33	*lu-sí-ih-ma*	RA 102, 3:10	Rim-Sin	RS
34	*mu-sà-hi-ir-ti-im*	UET 5, 60:11	Sin-bel-aplim	unspecified
35	*na-sà-hi-im*	AbB 10, 193:6	Ṣilli-Šamaš	RS
36	*na-sà-hi-im*	UET 5, 62:23	[…]-bum	unspecified
37	*ni-ik-mi-sú*	AbB 13, 6:8	[…]-ilum	Ha-Si
38	*nu-uk-ku-sà*	AbB 9, 264:11	Išar-kubi	early
39	*pi-i-sà-am*	AbB 14, 110:50	Šerum-ili	unspecified
40	*pu-sú-sí-im*	AbB 9, 232:8	Irra-bani	early
41	*pu-ur-sà-a-ma*	AbB 11, 194:46	Sin-muballiṭ	RS
42	*ri-ik-sí-ia*	FAOS 2, 174:6	Šesš-pa-tuku	early
43	*ri-ik-sú-ú-a*	AbB 5, 171:19	Naramtum	unspecified
44	*šu-ku*-[s]*í-ka*[740]	AbB 9, 234:6	Irra-bani	early
45	*šu-ku-sí*	AbB 9, 212:4	Lu-igisa	early
46	*šu-ku-sí*	AbB 9, 212:15	Lu-igisa	early
47	*ta-ak-ta*-[a]*m-sà-nim*	ABIM 28:9	Awil-Šamaš	RS

[739] The instance is taken as a N-stem form of the predicate *hasārum* to 'chip off, flake away'.
[740] It should be noticed that the term *šukūsum* 'subsistence (field)' is also cited with double /s/ (*šukussu*) in Akkadian lexicological accounts such as the CDA and AHw dictionaries.

48	*ta-ap-ru-sà*	AbB 2, 117:19	Ahum	early
49	*ta-pa-ra-sà*	AbB 13, 55:8'	Ahum	early
50	*ta-sà-la-ah*	UET 5, 72:38	Ea-naṣir and Ilušu-tillassu	unspecified
51	*ta-sà-la-ah*	UET 5, 12:22	Erišti-ili	unspecified
52	*tu-sà-ni-iq*	UET 5, 23:18	Imgur-Sin	unspecified
53	*u*[p]-*pi-sà-a-šu*	AbB 8, 14:17'	Rim-Sin-Enlil-kurgalani	RS
54	*ú-sà-an-ni-qá-am-ma*	AbB 10, 193:13	Ṣilli-Šamaš	RS
55	*ú-si*[741]	AbB 9, 264:6	Išar-kubi	early

The influence of chronological factors on the distribution of the variable (s,z) in non-initial short /s/ is discussed in the following section. But, before carrying out an analysis of language-external factors, it is worth examining the potential influence of a language-internal element in the variation shown by the two tables: this is, the difference between cases in which /s/ occurs in intervocalic position, and cases in which it follows a consonant. In section 4.2.2.4, the quantitative analysis of the same circumstances for the northern-related letters in ACCOB did not reveal a significant difference between both scenarios. For the southern-related group of letters, the data presented in Table 49 and 50, above, does not show either robust evidence supporting the assumption that the intervocalic position of /s/ would influence the distribution of the variable (s,z) for non-initial short /s/. Although in comparison with northern letters, the southern group presents a noticeably higher proportion of Z-spellings, there is no significant difference in the use of S- or Z-signs between intervocalic /s/ or /s/ preceded by a consonant, among the southern instances analysed.

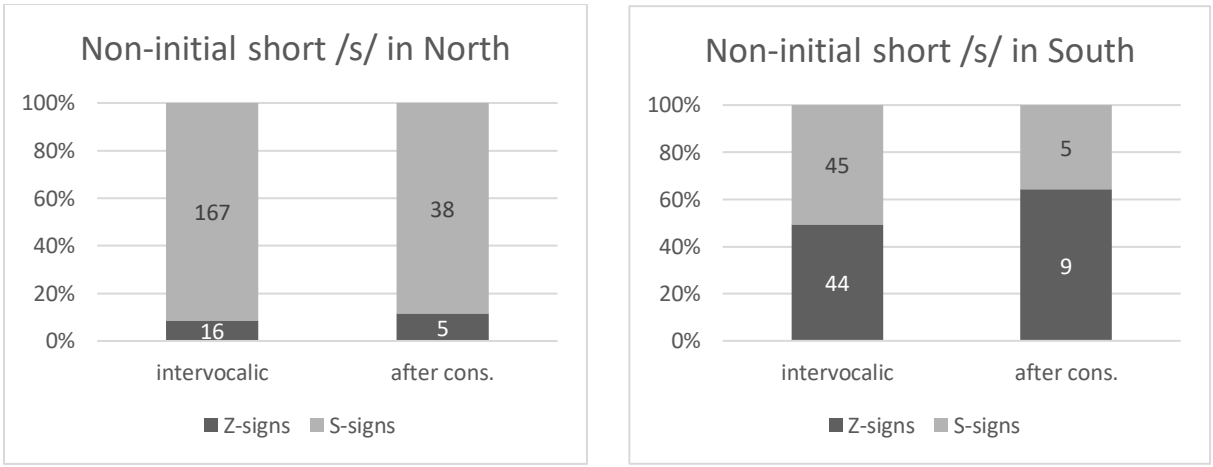


Figure 37: Percentage of spellings of non-initial short /s/ in intervocalic position and after consonant in northern- and southern-related letters in ACCOB.

Moreover, while it has been assumed that, out of the two scenarios here discussed, Z-signs are more characteristic for the representation of /s/ in intervocalic position[742], the data from the corpus indicates, by contrast, that it is in /s/ preceded by consonant where Z-spellings are slightly more frequent. As occurs with northern-related data, however, the sheer

[741] The term *ūsum* 'usage, custom, good practice' occurs likewise accompanied by the form *ussu* in Akkadian dictionaries (see, e.g., AHw III).
[742] Streck 2014, 25 (§63 c, d and e).

account of instances of Z-spellings returns a higher number of cases occurring in intervocalic position (44 cases against only 9 preceded by a consonant). Nevertheless, the account of the total number of counterexamples (i.e., same occurrences of S-signs to represent /s/ in the same scenarios) is crucial to determine the real extent of the spelling trait, showing that in the overall analysis of the data, the proportion of S- and Z-spellings for intervocalic /s/ and /s/ preceded by consonant remains chiefly balanced.

4.2.3.4 Chronological constraints.

The previous sections show the relatively few instances of CV signs of the S-series that occur in southern-related letters, in comparison with the other regions studied thus far. Even for the rendering of non-initial short /s/, spellings with S-signs, strongly favoured in Diyala and northern letters, amount to less than half of the occurrences in southern-related texts. The prominent use of Z-spellings in this area, therefore, supports to a certain extent the observations made by Goetze (1945 and 1958), who in the differentiation of the North-South dialectal areas, assumes the exclusive use of Z-signs for /s/ in the South[743].

However, a large number of exceptions to this statement occur in the ACCOB corpus, mainly for the representation of /s/ in a specific phonological circumstance: non-initial short /s/. This nuance complies, on the other hand, with the allophonic pattern, which was better described and studied after Goetze's pioneering observations. Thus, the data presented here encompasses both assumptions: a general preference for Z-signs in southern texts, and a phonologically-grounded replacement of Z-signs for S-signs in certain morpho-phonological circumstances, i.e., in short /s/ when it is not in word-initial position. However, while the composition of the southern-related sub-division of ACCOB does not include late OB letters, it contains a considerable volume of data from early OB, particularly from the archive of Lu-igisa in the region of Lagaš and the archive of Kisurra. The orthographic features of both archives have been already described in the literature[744]. Following Goetze's dialectal division, Walters 1970 explains that the characteristics of sibilants in the archive of Lu-igisa:

> this archive follows southern Old Babylonian more closely than any other dialect. **s*, **ṣ* and **z* are all regularly represented by the signs ZA, ZI, ZU (Walters 1970, xxi).

However, it has been argued in later studies that the representation of /s/ developed through time, from an early phase of consistent use of Z-signs to a progressive replacement of these signs for graphemes of the S-series. The question remains as to what extent the chronological composition of the sub-corpus of southern-related letters affects the prominence of Z-spellings for /s/. The early letters from Kisurra and Lagaš show an almost exclusive use of CV signs of the Z-series, although some S-spellings occur already in these early stages (see tables 47 and 49). Figure 38, below, shows the number of instances of the variable (s,z) in southern-related letters, divided by morpho-phonological variables and by four temporal groups corresponding to: early OB letters; letters contemporary to the reigns

[743] Except for the sibilant found consistently spelled by S-signs in a small set of lexical items, called s_x in Goetze 1958.

[744] See, i.a., Kienast 1978, J. Westenholz 1983 and Sommerfeld 1983 for Kisurra; and Walters 1970 and its review in Stol 1971 for the archive of Lu-igisa.

of Sin-muballiṭ of Babylon (Sin-mu) and Rim-Sin (RS); letters from the time of Hammurabi and Samsu-iluna (Ha and Si); and letters that have not been dated[745].

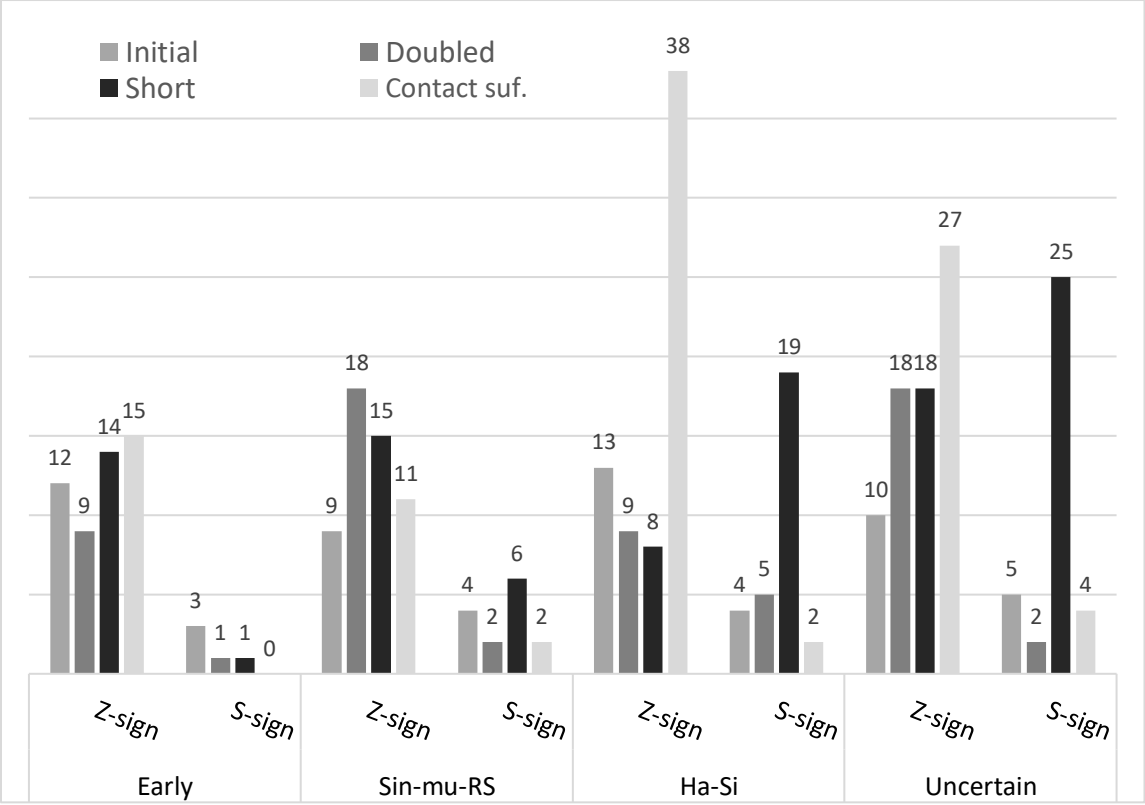


Figure 38: Instances of the variable (s,z) in southern-related letters in ACCOB divided by periods.

It can be observed that the early periods favour more clearly Z-spellings in all four circumstances[746], a preference that continues in the time of Hammurabi and Samsu-iluna; most notably in the contact between radical dental or sibilant and pronominal suffixes. Nonetheless, it is in this middle OB period when an increase in the number of S-signs occurs, more markedly in the representation of non-initial short /s/ (black-coloured bars) which now doubles the number of instances of Z-spellings in the letters from the southern group in the corpus.

The group of non-dated letters resembles the letters from the period of Hammurabi and Samsu-iluna in the representation of short /s/ (although to a lesser extent), while it still includes a global majority of Z-signs for the orthography of the consonant. Within this group, almost half of the occurrences of S-signs (in any position) come from letters related to the city or Ur (16), followed by Nippur (9). However, Z-signs also correspond largely to the letters related to Ur (19), followed by Larsa (15). The lack of reliable dating for a great number of letters prevents a closer examination focused on the representation of /s/ in individual sites from southern Mesopotamia.

The distribution of different spelling choices for the variable (s,z) in southern-related letters in ACCOB, although notably influenced by the chronological factor, appears to be also

[745] It should be noticed that some of the instances written with S-signs in the figure correspond to lexical items that have been distinguished from other instances of /s/ (see tables 47-49 in sections 4.2.3.1 to 4.2.3.3 above).

[746] See instances of these S-spellings from figure 38 in Tables 47, 48 and 49 (sections 4.2.3.1, 4.2.3.2 and 4.2.3.3, respectively), and Z-spellings for short /s/ in non-initial word in Table 50 (section 4.2.3.3).

conditioned by the morpho-phonological position of the phoneme /s/. Thus, it is in non-initial short /s/, first in texts from the reign of Rim-Sin and most evidently in the time of Hammurabi and Samsu-iluna, that S-spellings become prominent, in a process that replicates the so-called allophonic pattern most easily observable and documented in northern-related letters.

4.2.4 Summary of the regional distribution of the variable (s,z)

Although basic differences have been observed in the representation of /s/ in the Diyala region, the northern area and the southern-related texts of the corpus, a similar tendency towards the incipient switch from Z-spellings to S-spellings in a particular morpho-phonological case, namely, in non-initial short /s/, is suggested by the data retrieved from all areas studied[747].

The phonological process that leads to the general use of S-spellings in the South of Mesopotamia, nevertheless, is attested at a slightly different pace than the other areas studied. Even though no late OB texts have been recovered from southern sites, a geographical distinction in the rendering of /s/ emerges from the account of data from middle OB between the Diyala area, northern and southern Mesopotamia. The dissimilarity between the three areas is visible in the representation of non-initial short /s/, the only scenario in which the allophonic pattern predicts an S-spelling. Figure 39, below, compares the proportions of Z- and S-signs of the CV type for the rendering of short /s/ in non-initial position, in letters dating to the time around the reigns of King Hammurabi and Samsu-iluna[748].

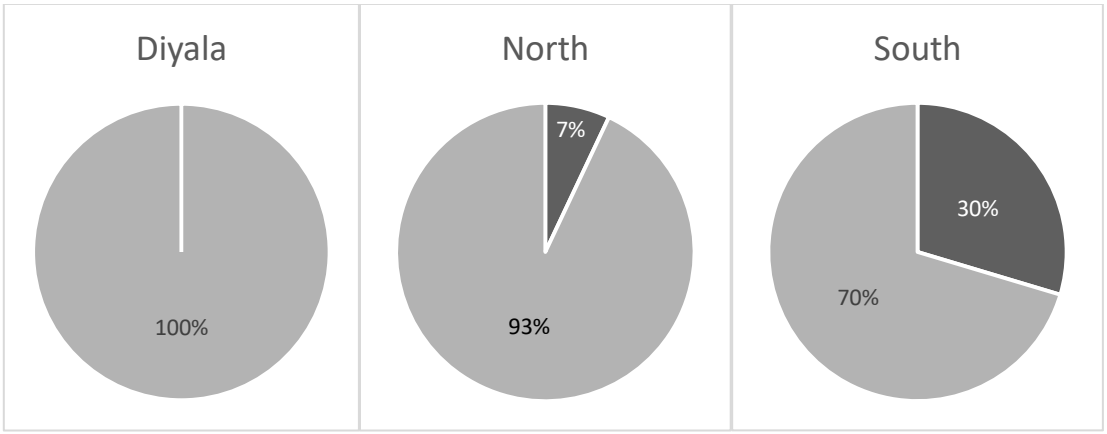


Figure 39: Percentages of signs for the variable (s,z) for non-initial short /s/ in letters from the time of Hammurabi and Samsu-iluna included in ACCOB. Light grey represents S-signs and dark grey Z-signs[749].

The written evidence from a restricted and nearly contemporary time-span suggests that a regional distinction in the representation of sibilants in the corpus of OB letters is not merely caused by the unbalanced chronological composition of the regional sub-groups in the ACCOB corpus. Consistent dissimilarities in the rendering of /s/ in epistolary

[747] Although the middle OB letters from the Diyala region present a more frequent use of S-spellings in all the enviroments, non-initial short /s/ is the only instance in which no Z-spellings are found.
[748] This particular time-span within the middle OB period has been conventionally chosen for the sake of comparison, since it is the best attested sub-period for all three areas.
[749] It is important to note that the total amount of instances accounted for each of the graphs vary greatly: letters related to the Diyala area: 21; letters related to the North: 114; and letters related to the South: 27.

documents[750] correlate with regional variables, which could be argued to indicate the existence of a synchronic phonological distinction among regionally-bound Old Babylonian dialects.

4.3 The variable (s,z) in the contact of radical /š/ and /š/ from suffixes.

The contact between the phoneme /š/ from the root of a lexeme and the phoneme /š/ from a pronominal suffix is attested in only 19 occasions in ACCOB[751]. The scantiness of the evidence makes the assessment of potential orthographic outcomes related to language internal or external variables an unsurmountable task; however, the data from the corpus allows for informative observations. As mentioned in the introduction to chapter four, an analysis of data made by Goetze (1958) concluded that OB documents also show a regional differentiation in the spelling of this contact scenario, by which northern documents present typically Z-signs while southern ones present S-spellings. This assumption was further revised and surpassed by authors such as Westenholz (2006) and Streck (2006). The former notes that S-spellings are the common spelling in all OB documents, including also texts from the North. Furthermore, Streck (2006) acknowledges that exceptions to this also occur without any clear diatopic distribution[752].

The data in the ACCOB corpus contains twice as many instances of CV signs of the S-series as Z-spellings for the rendering of /s/ in this morpho-phonological scenario[753]. Table 51, below, shows the instances of S-signs found in ACCOB.

Table 51: Instances of CV signs of the S-series in the representation of the phoneme resulting from contact between radical /š/ and /š/ from a pronominal suffix in ACCOB.

N.	Form	Letter	Sender	Period	Area
1	*ap-pu-si-na-ti-ma*[754]	AbB 5, 277:8	Šat-Damu	unspecified	North
2	*e-pé-su*[755]	AbB 10, 41:13	Munawwirum	unspecified	North
3	*e-ri-is-su*	AbB 13, 7:16	Hammurabi	RS-Si	North
4	*e-ri-su*	AbB 10, 10:9	Etel-pi-Marduk	unspecified	North
5	*e-ri-su-ma*	AbB 2, 178:9	Adad-šarrum II	unspecified	North
6	*er-re-es-su-nu*	AbB 4, 95:18	Hammurabi	RS-Si	North
7	*e-te-ne-er-ri-is-su-ma*	AbB 2, 24:10	Hammurabi	RS-Si	North
8	*i-te-pí-is-si-na-ti*[756]	ARM 28, 1:6'	Hammurabi	RS-Si	North
9	*ni-pí-si-n*[a]	AbB 5, 277:9	Šat-Damu	unspecified	North

[750] For CV signs representing non-initial short /s/.

[751] The phonetic process(es) that lie behind the orthographic rendering of the situation of contact between radical /š/ and /š/ from a cliticized suffix are not entirely clear. For the assessment of possible phonetic motivations based on the phonetic articulations of /š/ as [s], [š] (sic.), [ɬ] and [ˡɬ] see Streck 2006, 242. 243, 244 and 246.

[752] Streck (2006) comments about contact /š+š/ from lexeme's radical and pronominal suffix: 'There is not a clear distribution of Z- or S-spellings. Both types occur together in CH and are variants in one Hammurabi inscription in RIME 4.' (Streck 2006, 240).

[753] This matches Streck's observation on his data: 'The combination /š+š/ is rendered with Z- or -more often- S-.' (Streck 2006, 239).

[754] Form of the verb *napāšum*, 'to pluck, pick (wool)'.

[755] A pronominal suffix is assumed to be rendered in the form. See the translation in AbB 10:'können wir ihn/ es nicht 'machen'' (Kraus 1985 [AbB 10], 51). However, the context is not clear.

[756] This instance is not included in the list of occurrences of sibilants from letters sent by Hammurabi in Streck 2006.

10	*i-pu-su-um*[757]	AbB 11, 135:10	Rim-Sin-[…]	RS-Si	South
11	*e-ri-i-su-ú-ma*	AbB 5, 35:5	Unknown IX	RS-Si[758]	South
12	*re-es-su*[759]	Fs Garelli pp. 147-159, iv:25'	Ibal-pi-El II	RS-Si	Diyala

Most of the examples gathered in the table stem from northern-related letters in ACCOB (see however the southern association of instances n. 10 and 11). This data contravenes in two different senses the distributional pattern proposed by Goetze: (1) S-spellings occur more notably in northern-related letters, rather than in the southern texts; and (2) both areas, as well as the Diyala region, are represented in the table, which does not support a clear-cut regional differentiation. It should be stressed, however, that no occurrences of early OB or late OB letters are included among the data from the corpus.

By contrast, Table 52, below, presents the alternative spelling (Z-signs) for the same phonetic cluster:

Table 52: Instances of CV signs of the Z-series in the representation of the phoneme resulting from contact between radical /š/ and /š/ from a pronominal suffix in ACCOB.

N.	Form	Letter	Sender	Period	Area
1	*e-ri-iš-sú-nu-ti-ma*	AbB 14, 213:13	Ahum	early	South
2	*li-bi-iš-sú-ma*	AS 22, 12:17	Battum	early	Diyala
3	*tu-še-ep-pé-es-sú-nu-ti*[760]	AbB 5, 136:8	Hammurabi	RM-Si	North
4	*ni-di-is-sú*[761]	AbB 3, 54:15	Mannum-mešu-liṣṣur	RM-Si	North
5	*e-er-ri-iš-sú*	AbB 14, 163:27	Šamaš-hazir	RM-Si	South
6	*re-sú*	AbB 6, 118_24	Šamaš-naṣir II	RM-Si	North

Additional counterexamples to Goetze's assumption that southern texts relate to S-spellings in the contact /š/ + /š/ are found in instances number one and five of this table. The first one is in an early OB letter related to Ahum (or perhaps Kisurra), and the second is an instance included in a letter from Šamaš-hazir, the official of King Hammurabi in Larsa. Although some of Šamaš-hazir letters present northern features, AbB 14, 163 presents typical southern orthographic traits such as the use of the sign DU for /ṭu/ (in the greeting formula and elsewhere) or the sign PI for /pi/.

On the other hand, the first two instances of the table correspond to the early OB period. One letter, as commented, was sent by Ahum, probably from Umma, whereas the second one stems from Ešnunna. In both cases, as well as in a later instance from the time of Hammurabi (number five in the table), the Z-sign is preceded by a CV sign of the Š-series. This is not found in any of the instances of S-spellings in Table 51. However, the collection of letters AbB includes two examples of similar situations in which S-signs occur instead

[757] For the idiomatic expression *pûm epēšum* from which instance 10 stems, see CAD, vol 4 [E], 215.
[758] The dating of this letter in only tentatively assigned to the reign of Rim-Sin based on the form of the script, described by Kraus as belonging to the type called 'Rim-Sin-Schrift' (Kraus 1972 [AbB 5], 16).
[759] Following collation in Archibab: http://www.archibab.fr/4DCGI/listestextes7.htm?WebUniqueID=794607 [accessed 01.07-2017].
[760] Streck (2006) notes: 'The signs are damaged but in the copy of J. A. Knodtzon, BA 4 p. 99 they look more like -EZ-ZU than -EZ-SU-.' (Streck 2006, 239, note 262).
[761] For this form, see Frankena's comment: 'Die Form *nidissu* ist aus *nidiššu* entstanden. Zu *diāšum* ‚dreschen'' (Frankena 1978, 178).

of Z-signs: *ta-aq-ti-iš-su*[762], which occurs in a letter with southern orthographic traits[763]; and *li-pu-uš-su-ma*[764], from a letter described by Kraus (1977) as having 'ungewöhnliche Orthographie.'[765]. A further example of both orthographies is given in Streck 2006, in the two variants from one OB royal inscription: *e-pu*-ZU-*um* and *e-pu*-UŠ-SU-*um*[766].

While the graphical retention of radical Š-signs in these spellings cannot be safely put forward as an element that correlates clearly with subsequent Z- or S-signs, two observations from the data point towards a possible relation between the occurrence of Z-signs in the context under analysis (š+š) and the use of Z-signs for /s/ in other environments of the variable (s,z):

First, the only two early OB instances in ACCOB of the variable (number one and two in Table 52) contain Z-signs (preceded by *iš*). As discussed in sections 4.2.3.4, early OB texts from southern areas are characterised by a higher proportion of Z-signs for the variable (s,z). This is probably also the case for early OB letters from the Diayala area, although, as explained in section 4.2.1.1, there is not a definite attestation for this.

Second, two instances of Z-spellings (number three and six in the table) occur in letters from Hammurabi and Šamaš.naṣir II, senders associated to northern Mesopotamia. Both individuals have been already mentioned in the previous chapter 4.2.2.6.1 with regard to the 'irregular' occurrences of Z-spellings in non-initial short /s/ occurring in their letters, which in fact entail a third of all these 'irregular' Z-spellings in the northern sub-corpus of ACCOB (see Table 44 in section 4.2.2.4). Moreover, while it is true that these orthographies are comparatively rare among the regular rendering of /s/ in Hammurabi's letters, one of the texts where an unexpected Z-spelling occurs for non-initial short /s/ (*u-sú-uh-šu-nu-ti*[767]) is letter AbB 5, 136, precisely the same text that contains a Z-spelling from the contact between radical /š/ and /š/ from a suffix (instance number three in Table 52, above). The instance number five, from a letter from Šamaš-hazir, does not present 'irregular' Z- or S-spellings for the representation of /s/. However, the only letter from this sender that contains an 'irregular' S-sign is AbB 14, 162, a text that contains northern orthographic features[768] that contrast with the southern traits found in AbB 14, 163[769], the letter with the Z-sign for the contact /š/ + /š/.

The cases where /š+š/ results in S-spellings, shown in Table 51, occur more frequently in northern-related letters, a group that does not generally use 'irregular' Z-signs for /s/ (but see some exceptions in letters from Hammurabi and Šamaš-naṣir commented above). Regarding the two southern-related letters in Table 51 that contain S-signs for the contact /š/+/š/, it should be noticed that one of them, AbB 11, 135 (instance 10 in Table 51) contains also, if read correctly, an 'irregular' S-spelling for initial /s/: *s*[u-u]*n-ni-iq-šu*(?)-*ma* (line 21).

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[762] From the predicate *qiāšum* 'give, donate' and the pronominal suffixe -*šu* (AbB 14, 139:12).
[763] See, e.g., the forms *ṭù* (AbB 14, 139:5) and *pi* (AbB 14, 139:15).
[764] From the predicate *epēšum* 'to do' (AbB 7, 21:29). Note that the dental radical is also preserved in the same letter when is followed by a suffix in the form *aṣ-ba-at-s*[u-nu-ti-m]*a* (line 12).
[765] Kraus 1977 (AbB 7), 16.
[766] Frayne 1990 (RIME 4), 349; see commentaries and further references in Streck 2006, 239.
[767] AbB 5, 136:12.
[768] See that it includes *ṭú*, the phonetic complement A.ŠÀ-*im* (AbB 14, 162:5), unusual in southern-related letters (see section 3.6),
[769] Such as the use of the sign DU for /ṭu/ (in the greeting formula and elsewhere), the form *šâti* or the sign PI for /pi/.

In sum, the few cases gathered in Table 52 (Z-signs), differ from those of Table 51 (S-signs) in that: (1) they include two early OB spellings, and (2) the middle OB instances from northern areas occur (in two of the three cases) in letters from Hammurabi and Šamaš-nāṣir II, salient individuals (or salient letters among this individuals) due to the parallel rendering of /s/ with Z-signs in other morpho-phonological circumstances. This and the fact that one of the southern letters including a S-spelling also presents an 'irregular' S-sign for word-initial /s/, suggest that the distribution of Z- and S-spellings for the sibilant resulting from the contact between radical /š/ and /š/ from a suffix might not be entirely randomly distributed in the corpus. Instead, the two variant orthographies for /š+š/ might correlate with other spellings of /s/ that associate with a general phonological process (probably deaffrication) for the sibilant |s*|. The evidence from the OB letters from ACCOB, however, is too scarce to corroborate this conjecture; further examination of other data from OB texts would hopefully help assessing this correlation.

4.4 The representation of /s/ in syllabograms of the type VC

The analysis of the representation of /s/ in previous sections has focused exclusively on graphemes rendering the cluster of consonant followed by a vowel (CV). The variation in the spelling of /s/ through CV signs has also been more thoroughly described in previous studies on OB sibilants. Nevertheless, the study of the distribution of VC-signs was already noted in the examination of sibilants in Goetze 1958. This study, however, accounted only for the occasions in which VC-signs accompany CV-signs in the representation of doubled or long /s/[770]. Goetze's observations show that VC signs of the Z-series occur normally before CV signs of the Z-series in certain OB texts, whereas VC signs of the S-series, correspondingly, precede S-signs of the type CV[771].

More recently, M. Streck in 'Sibilants in the Old Babylonian texts of Hammurapi and of the governors in Qaṭṭunān' (Streck 2006), not only accounts for VC signs in VC-CV clusters, but also includes a comprehensible list of occurrences of VC graphemes representing /s/ in other circumstances. He also analyses the use of VC signs ÁŠ, UŠ, IZ, ÌZ[772] and IŠ for /s/ in 'syllable final position' concluding[773]:

> After /a/ and /u/, syllable final /s/ is always written ÁŠ and UŠ, but never AZ and UZ […] ÁŠ and UŠ belong to the S-sign set. Thus [ˈs] always becomes a deaffricate [s] after /a/ and /u/. (Streck 2006, 225)[774].

For the cluster /is/, Streck adds:

> After /i/, syllable final /s/ is always written IZ in the letters of Hammurabi and in the CH, as well as sometimes in ARM 27. In ARM 27 syllable final /s/ is more often spelled ÌZ […]. Since it would be difficult to account for why /s/ is persistently affricated after the vowel /i/, but is deaffricate after /a/ and /u/ on purely phonetic

[770] See Goetze 1958, 138.
[771] An exception to this pattern in Goetze's article comes for OB texts from Susa, where the contact 'sibilant + suffix' presents, according to Goetze (1958), CV signs of the Z-series preceded by '(AŠ), IŠ, (UŠ)' (Goetze 1958, 138, note 3).
[772] Sic. Sign AB.
[773] The instances of VC signs of the Z-series in the corpus analysed in Streck 2006 are not presented in a separate list but within the occurrences of CV-signs in sections presenting Z-signs in the rendering of long /s/ and the dental(-alveolar) + /š/.
[774] The assumption of a historical process of deaffrication is also suggested by the fact that the syllable-final segments /as/ and /us/ were normally rendered by Z-signs of the VC in Sargonic Akkadian (Streck 2006, 225, note 34).

> grounds, it might be more productive to try to find an orthographic explanation for this phenomenon. (Streck 2006, 225).

Therefore, going further than Goetze's observations, Streck relates the variation in spellings using VC signs with the parallel process of deaffrication discussed earlier for cases of variation in CV signs. Regarding the language-internal circumstances of inception and spread of the process of deaffrication, Streck (2006) concludes:

> The evidence presented here clearly reveals that deaffrication started in syllable final position whereas affricates remained stable in word initial position and when doubled (Streck 2006, 225, note 30)[775].

It should be noticed that there is no reference in Streck 2006 to the question of whether the deaffrication of non-initial short /s/ in syllable onset (largely rendered by S-signs of the CV type in OB texts) occurred before or after the mentioned deaffrication of syllable final /s/.

4.4.1 Regional differences

In order to assess the distribution of the variable (s,z) in the orthography of VC signs in OB letters with regard to their geographical relation and in comparison with the distribution of CV-signs in similar circumstances, an account of the occurrences of VC signs rendering /s/ in the texts from ACCOB is presented hereafter. For the analysis, the signs AZ and UZ are considered members of the Z-series when they render /s/, and are transliterated: *as* and *us*. The corresponding S-signs are therefore ÁŠ and UŠ, transliterated *ás* and *ús*[776]. As remarked in Streck 2006, the representation of the cluster /is/ and /es/ in most areas of OB central Mesopotamia is realized by one single sign, IZ[777]. This means that no contrast for the variable (s,z) can be established for the /is/ and /es/ segments for northern- and southern-related texts. However, in the area of the Diyala a separate grapheme, AB, occurs in the representation of /is/ and /es/, transliterated *ìs* and *ès*. The last two forms are considered equivalent in their distribution to other signs of the S-series[778].

The account of instances of VC signs for the rendering of /s/ in the OB letters from ACCOB, divided by regions, is shown in Table 53, below[779].

Table 53: N. of instances of VC signs for /s/ in ACCOB by region.

	***as* (AZ)**	***ás* (ÁŠ)**	***is* (IZ)**	***ìs* (AB)**	***us* (UZ)**	***ús* (UŠ)**
North	66	27	134	6	18	38

[775] Contra the comment in Izre'el and Cohen 2004, 10: 'During the OB period, a process of simplification is thought to have changed the character of these three phones [*s, z* and *ṣ*] to fricative, first as allophones in word-initial position and when doubled, then in all positions'.

[776] For the appurtenance of these signs to the set of graphemes rendering fricative /s/ and their distribution in AbB and the text of the Code of Hammurabi see Sommerfeld 2006, 367 ff.

[777] As indication that the sign IZ was the only single form to represent both affricate but also fricative /is/ in central Mesopotamian OB texts, it has been pointed out that, in complementary distribution to *ás* and *ús*, IZ consistently occurs preceding S-signs of the CV type in the representation of doubled /s/ (see Streck 2006, 239). Further evidence might also come from cases of occasional interchangeability between the sign IZ and VC signs of the S-series: e. ÁŠ for /is/ in AbB 14, 32:8 (*li-ip-pa-ri*-ÁŠ, from the verb *parāsum*); AbB 10, 50:19 (*na-ap-li*-ÁŠ, from the verb *palāsum*). See Kraus 1985 (AbB 10), 58, note 50b about the same orthographic feature in PNs.

[778] S. Streck 2006, 226 (table 1) and Sommerfeld 2006, 367.

[779] The instances of ÁŠ and UŠ employed to render allophones of phonemes other than /s/ are not included in this account. For those, see Sommerfeld 2006, 367 ff., and Streck 2006, 216-218 and 233 ff.

Diyala	1	8	6	5	1	6
South	59	11	50	0	23	3

Although instances of the sign AB representing /is/ occur six times in northern-related texts for five times in letters from the Diyala group, the relative proportion of occurrences compared with the alternative sign IZ confirms that AB is a spelling strongly associated to texts from the Diyala region, amounting to almost half of the instances of the variable (is,ìs) in this region[780]. Regarding the remaining six cases of *ìs* not included in the group of Diyala letters in ACCOB, Table 54, below, lists the occurrences:

Table 54: N. of instances of AB for /is/ in northern-related letters in ACCOB.

N.	Form	Letter	Sender
1	*ìs-ni-qá-am*	AbB 12, 11:14	Igmil-Sin
2	*ka-mi-ìs*	AbB 12, 11:10	Igmil-Sin
3	*ìs-ni-qa-a*[m-m]*a*	AbB 5, 223:13	Ibni-Tišpak
4	*ìs-ni-qá-am*	AbB 14, 187:8	Belanum
5	*ìs-ni-qá-ni-im*	AbB 6, 52:13	Belanum
6	[i]-*ra-pí-ìs-ka* [781]	AbB 3, 51:10	Belšunu

All the instances correspond to letters included in the northern-related sub-division of the corpus. It should be stressed that the proportion of spellings AB for /is/ among the northern-related letters is, nevertheless, insignificant compared to the large number of instances of the sign IZ (134). It is also plausible that some of these letters, mostly associated to the northern city of Sippar had some links with the Diyala region or other peripheral areas, as it is suggested by the name of the sender in number three, which contains the theophoric reference to Tišpak, the patron deity of the city of Ešnunna[782].

Within the group of letters from the Diyala, VC signs of the S-series occur in most of the instances (see Table 53[783]), which correlates with the clear preference for S-signs in the variable (s,z) for CV graphemes (see section 4.2.1). Moreover, unlike other OB areas in the corpus, S-spellings occur in this region also for the rendering of long /s/ (e.g. *li-ha-ás-si-su-ka*[784]) or for the representation of the consonant resulting from contact between dental(-alveolar) and /š/ from pronominal suffixes (e.g. *ap-qí-ìs-su-um*[785]).

[780] Sign AB occurs in the Diyala texts in: *li-ìs-si-i-ma* (JCS 24, 65:9'); *li-ìs-su-uq-ma* (Semitica 58, 1 [PM 204]:41); *ap-qí-ìs-su-um* (Sumer 14, 1:18 and 23) and *li-ìs-su-ḫu-ú* (Sumer 14, 14:19).
[781] Frankena 1978, 163: 'ìs "wohl richtig", obwohl für AB ausserhalb der Mari-Texte selten ist'.
[782] See a reference to an individual of the same name in CT VIII, 37b dated in Ha 1: 'Ibni-Tišpak, son of Belšunu, who resides in Ešnunna'. (S. Goddeeris 2002, 136).
[783] Sign ÁŠ: *ta-ah-ta-na-sà-ás* (AbB 8, 5:7); [á]*s-sú-uh-ma* (AbB 8, 7:12); *li-ha-ás-si-su-ka* (Fs Garelli p. 147-159, iii:16); *ip-ta-ás-su* (JCS 24, 67:11); *i-pa-ra-ás* (OBTIV 9:23); *na-ás-ha-a-ta* (OBTIV 15:4); *in-na-*ÁŠ (OBTIV 23:4) and *ša-na-ás-su* (Sumer 14 22, 14). Sign UŠ: *lu-ús-su-u*[h] (Fs Garelli p. 147-159, i:8); *pu-ru-ús* (JCS 24, 63:7'); *pu-ru-ús-sà-am* (JCS 24, 63:15'); *ús-sa-an-ni-qú-nim* (Sumer 14, 1:29); *ḫu-ús-su-si-ku-nu* (Sumer 14, 1:31); and *ḫu-ús-si-sa-an-ni-i-ma* (Sumer 14, 1:43).
[784] Fs Garelli p. 147-159, iii:16. See, however, the exceptional Z-sign following *ús* in *pu-ru-ús-sà-am* (JCS 24, 63:15') for *purussûm* 'decision'.
[785] Sumer 14, 1:19.

However, VC signs of the Z-series are also attested in eight spellings among the letters related to the Diyala in ACCOB for the rendering of /as/, /is/ and /us/[786], especially in early OB letters:

Table 55: Instances of VC signs of the Z-series rendering /s/ in letters related to the Diyala region in ACCOB.

N.	Form	Letter	Sender	Period
1	[...]-*as-sú-un*	AS 22, 14:6'	Adallal	early
2	*is-h*[u-...]	AS 22, 40:2'	Abdi-Erah	early
3	*a*[t]-*ta-na-ap-hu-us*	AS 22, 30:9	Ili-išma-liya	early
4	*ʾis-suʾ*-[hu]	Fs Garelli p. 147-159, iii:9	Ibal-pi-El II	Ha
5	*ṣí-di-is-su*	Fs Garelli p. 147-159, i:6	Ibal-pi-El II	Ha
6	*ú-ša-am-ri-is-ʾsúʾ-nu-ši-im*	OBTIV 23:11	Unknown II	unspecified
7	*is-su-ú*[787]	AbB 8, 6:5	Abizum	Ha
8	*is-qú-ša*	OBTIV 15:18	Ahat-waqrat	unspecified

Thus, the attestations of VC signs for /s/ in the early OB letters from Ešnunna consist exclusively of Z-spellings (n. one to three in Table 55). Although the evidence consists of merely three instances, they contrast with the clear preference for S-signs in the VC syllabograms for /s/ of later texts from the Diyala region, where a total of 19 occurrences of *ás*, *ìs* and *ús*[788]. This dissimilarity agrees with the expected use of Z-signs, also in VC signs, for earlier stages of OB, concurring to the hypothesis of phonological spirantization of /s/ in the OB period.

The prominent use of S-signs in VC graphemes in middle OB letters from the Diyala that correlates with the parallel use of S-signs in CV signs contrast significantly with the distribution of the variables (s,z) in other regions. Excluding the representation of /is/, regularly rendered by the same signs IZ in southern- and northern-related letters, the comparison of the variables (as,ás) and (us,ús) in the three geographical subdivisions of the corpus shows the general salient preference for S-signs in the Diyala region:

[786] The uncertain form [a]s?-*sa-ba-at* (Sumer 13, 109 [IM 54005]:43) is not included.
[787] Form of the predicate *šasûm* 'to call'.
[788] It should be noticed that the sign IZ is precisely the VC sign that does not occur in dichotomic variable with a specific sign for fricative /s/ in northern and southern texts.

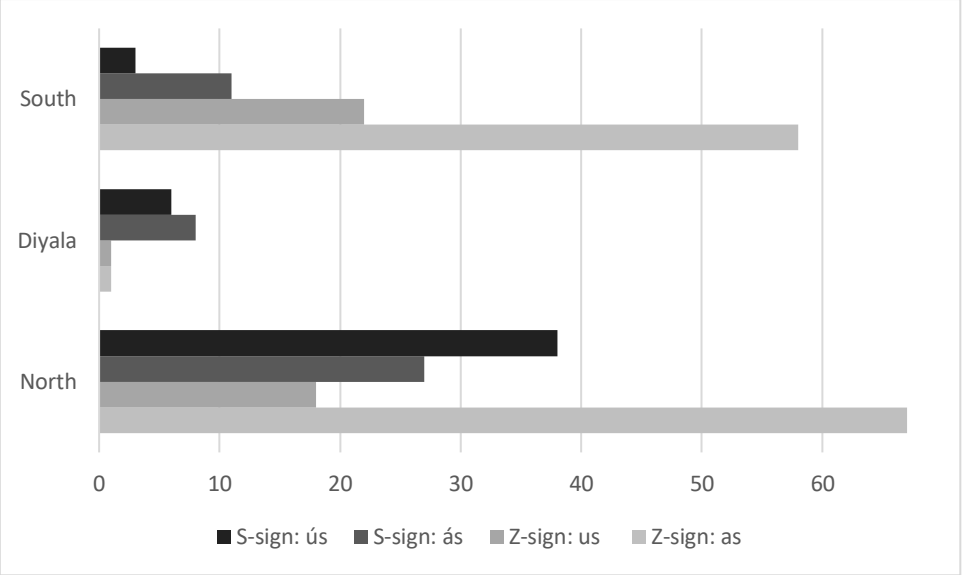

Figure 40: N. of instances of signs AZ, UZ, ÁŠ and UŠ representing /s/ in letters from ACCOB.

The darkest bars in Figure 41, which correspond to VC graphemes of the S-series, are clearly dominant in the record of the Diyala letters, whereas they represent a much lower percentage of the scale in the northern-related letters, and are even less significant among letters related to the South.

It can be observed that in both, northern- and southern-related letters, the cluster /as/ seems to occur much more frequently rendered by Z-signs of the VC type that the segment /us/, which is indeed very often represented by the sign UŠ in the letters related to the North. However, a closer look at the occurrences shows a correlation between the variables (as,ás) and (us,ús) and the rendering of short or long /s/ in the northern- and southern-related letters from ACCOB[789]. Thus, the vast majority of instances of the signs UZ and AZ in northern-related letters occur followed by CV-signs of the Z-series, either representing structural germination of /s/ (e.g., *ak-ta*-AZ-ZI-*ip-šum* form *kasāpum* 'to make funerary offering'[790]), or the phoneme /s/ resulting from contact between radical dental(-alveolar) or sibilants and onset /š/ from a suffix (e.g., *mar-ṣú*-UZ-ZU from *marṣūtum* 'trouble'[791]). The S-signs *ás* and *ús*, on the other hand, occur most often associated to the rendering of non-doubled /s/ in syllable coda.

To show the different impact of the graphemic construction VC-CV representing /s/ throughout the data from the three different regions in ACCOB, Figure 42, below, replicates the instances represented in Figure 41, but it excludes those cases of VC signs followed by CV signs employed in the rendering of long /s:

[789] The variable is, however, not relevant for the data from letters related to the Diyala region, where VC signs of the S-series are frequent in the rendering of both, long and short /s/.
[790] AbB 13, 21:9.
[791] AbB 9, 174:6.

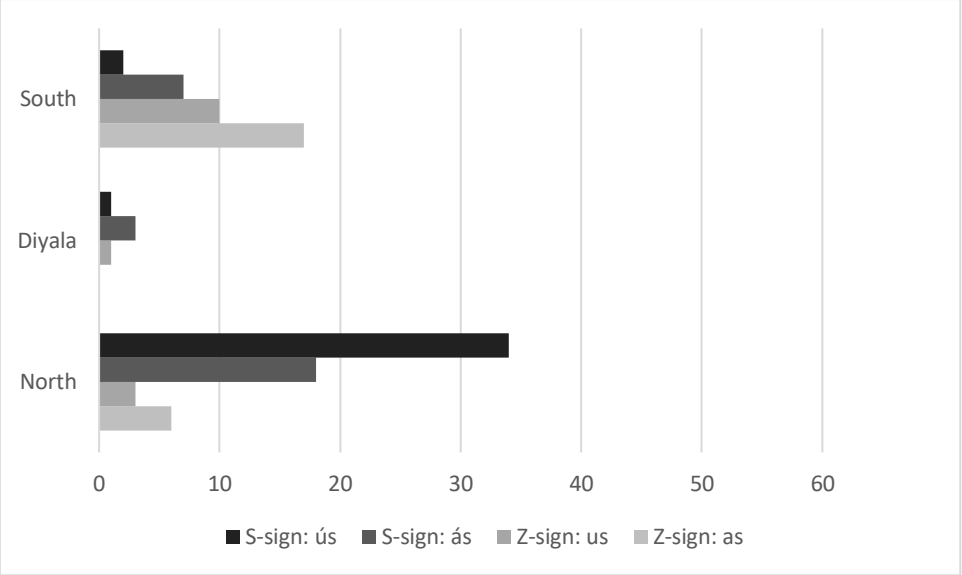

Figure 41: N. of instances of signs AZ, UZ, ÁŠ and UŠ representing exclusively short /s/ in letters from ACCOB.

The data from the graphic in Figure 42 confirms that VC signs occur more frequently in the ACCOB corpus as part of VC-CV constructions, i.e., in the representation of doubled /s/. But it also illustrates the fundamentally different manner of rendering short /s/ by means of VC signs in northern- and southern-related letters.

For the southern-related group, although the number of instances in Figure 42 is notably lower than in Figure 41, the proportional distribution of Z- and S-signs remains similar: favouring in both figures the use of Z-signs for every morpho-phonological environment.

However, the situation in northern-related letters changes dramatically from Figure 41 to Figure 42. The data from the corpus shows a clear distribution in these letters whereby VC signs of the S-series are more prevalent in the representation of short /s/, whilst VC signs of the Z-series occur mainly in the representation of long /s/ by means of graphemic clusters consisting of a combination of VC and CV signs. The distribution of spellings in the northern group agrees with Streck's assumption that short 'syllable-final' /s/ underwent deaffrication early in OB (and was, correspondingly, rendered by VC signs of the S-series), whilst /s/ in other contexts remained affricate for a longer period of time[792]. However, a distinctive regional variable also seems to affect the distribution of S- and Z-graphemes of the VC type in the general account of tokens from the corpus of letters.

Southern-related letters present a pattern that matches the distribution of the variable (s,z) in CV signs, where S-signs are less frequently attested. Therefore, the signs AZ and UZ are employed in southern-related texts, not only in VC-CV spelling constructions for the representation of long /s/, but also occur alone for the representation of short /s/ in syllable coda. Figure 42, above, shows how Z-signs of the VC type occur more than twice as often

[792] Streck 2006, 225, note 30.

as S-signs for the latter case[793]. The exceptions in which S-spellings appear in southern-related letters for the representation of short /s/ are shown in Table 56, below[794]:

Table 56: Instances of ás *and* ús *for non-doubled /s/ in the southern-related letters from ACCOB.*

N.	Form	Letter	Sender	Period
1	[n]*a-ás-pa-na-am*	AbB 5, 176:18	Unknown VII	unspecified
2	*ás-hu-ur-šu-ú-ma*	UET 5, 80:12	Nergal-gašer	unspecified
3	*ás-ni-*[q]*á-am*	AbB 13, 37:4	Zababa-naṣir	Ha
4	*ás-ni-qá-am*	AbB 13, 37:13	Zababa-naṣir	Ha
5	*ka-ás-pa-a*[m]	UET 5, 83:6	Ahuni	unspecified
6	*ka-ás-pa-am*	UET 5, 13:20	Ahiya	unspecified
7	*ta-pa-ra-ás-ma*	TCVP III 4 [A 16]:10	Ipqu-Sin	early
8	*ap-ru-ús-ma*	AbB 11, 189:30	Lu-Ninurta	Ha
9	*pu-ru-ús-ma*	UET 5, 12:13	Erišti-ili	unspecified

If the regional and temporal classification of these instances is correct, the most striking of the exceptions is an early southern attestation of a VC sign of the S-series for short /s/ in n. seven: *ta-pa-ra-ás-ma*. The short letter, dated from the reign of Sumu-El of Larsa[795], comes from clandestine excavations, and has been tentatively related to the city of Ur[796]. By contrast, VC signs of the Z-series are generally prominent in early OB letters from the archive of Lu-igisa (e.g. *as-hu-ur-š*[u-m]*a*[797], *ka-as-pa-am*[798] or *ta-pa-la-as*[799]).

Moreover, while southern-related texts undated or dated to middle OB also favour Z-signs[800], it is noticeable that three of the southern S-spellings shown in Table 56 date indeed to the reign of Hammurabi. However, some observations arise from the language-internal and external factors surrounding some of these instances:

- The sender of instances 3 and 4, Zababa-naṣir, is related to the southern archive of Sin-iddinam in Larsa (reign of Hammurabi). However, the content of the text

[793] The attestations for Z-spellings of CV type for short /s/ in southern-related letters are: Sign AZ (x17): *ip-ta-ra-as* (AbB 8, 14:14); *ta-pa-la-as* (AbB 8, 104:11); *it-ta-as-ma-ak* (AbB 9, 252:15); *sà-as*-KA-*am* (AbB 9, 258:6); *as-hu-ur-š*[u-m]*a* (AbB 9, 261:7); *ka-as-pa-am* (AbB 9, 261:26); *pa-ra-as* (AbB 11, 137:20); *pa-as-la-a-ku* (AbB 11, 185:21); *ip-pa-ar-ra-as* (AbB 14, 107:13); *it-ta-as-pa-h*[u] (AbB 14, 148:29); *ip-pa-al-la-as* (AbB 14, 221:11); *ni-ik-ka-as-sà-am* (ABIM 1, 20:17 and 51); *ni-ik-ka-as-sà-šu* (ABIM 1, 20:55); *ka-as-pi-im* (UET 5, 73:19); *ka-as-pa-am* (UET 5, 73:25) and *ka-as-pi-im* (UET 5, 81:30). Sign UZ (x9): *pu-ru-u*[s]-*ma* (AbB 4, 64:16); [pu]-*ru-us* (AbB 4, 73:17 and AbB 5, 37:6); *pu-ru-us-ma* (AbB 4, 115:15; AbB 14, 64:36, AbB 4, 134:18 and RA 102, 1:11); *ip-ru-us-ma* (AUWE 23, 76:7); *ru-ku-us-ma* (UET 5, 78:15) and *ta-ap-ru-u*[s] (UET 5, 82:6').
The uncertain form *at-t*[a-a]*s-li-i'* (ABIM 1, 20:83) has been excluded.

[794] The doubtful form *p*[u-r]*u-ú*[s(?)-m]*a* (AbB 11, 7:24) is not included in the account.

[795] Bulgarelli 2012, 27.

[796] Bulgarelli (2012) comments about the lot of documents from the archive of Ipqu-Sin: 'La provenienza di questo lotto di testi dal mercato dell'antiquariato rende difficile l'individuazione del luogo esatto di origine dell'archivio, che comunque può essere Ur: lo suggeriscono alcuni contratti di questo archivio (III-13, 14, 14a) che menzionano un giuramento «nel nome di Nanna e del re» e una letter-order (III-3), che riporta un giuramento per Sîn e il re, poiché Nanna-Sîn era il dio poliade di Ur.' (Bulgarelli 2012, 27).

[797] AbB 9, 261:7.

[798] AbB 9, 261, 26.

[799] AbB 8, 104, 11.

[800] See, e.g., *pu-ru-us-ma* (in RA 102, 1:11 [Kurgal-amahani]; AbB 4, 115:15 [Lu-Ninurta]; AbB 14, 64:36 [Ṣilli-Šamaš]); *ip-ta-ra-as* (in AbB 8, 14:14 [Rim-Sin-Enlil-kurgalani]) and *ka-as-pi-im* (in UET 5, 73:19 and UET 5, 81:30 [Ur]).

suggests that the letter was sent from a place called Kubatum, from where the issuer of the letter had departed towards Babylon[801].

- Two other letters from Table 56, UET 5, 80 and 83, contain features that have been interpreted as indications that they are school exercises[802].
- Finally, the exceptions to the use of VC signs of the Z-series for short /s/ in southern-related letters include an instance from a letter by Lu-Ninurta (n. 8). The heterogeneous orthographic and linguistic traits of the letters from this individual have been analysed in previous sections. Regarding VC signs for short /s/, Lu-Ninurta's correspondence in ACCOB presents two instances of *is* (*mi-ki-is*: AbB 4, 69:20 and 44), two instances of *us* (*pu-ru-us-ma*: AbB 4, 115:15 AbB 4, 64:16) and the form from Table 56: *ap-ru-ús-ma.* The cluster /is/ in invariably rendered by the same sign IZ in most letters from ACCOB, so this does not constitute a real variant of the variable (s,z) in northern and southern-related letters. However, unlike the two occurrences of *us* (UZ), the sign UŠ for /us/ appears in a letter that is salient in Lu-Ninurta's group, and indeed also within the ACCOB corpus, for the form of the demonstrative adjective: *šu-a-tu* (AbB 11, 189:23). This variant lexeme of the demonstrative is attested only 13 times in ACCOB, always in letters related to the North (Sippar: AbB 12, 3:9; AbB 12, 6: 12 and 18; Babylon: VS 22, 85:8; AbB 10, 171:44; Lagaba AbB 3, 39:16 and AbB 8, 158:14'), Harradum (Haradum 2, 60:29 and 30; Haradum 2, 68:26 and 29) and the Diyala region (Guichard Semitica 58, 4:7)[803].

It should also be noticed that two further VC signs of the S-series occur in the southern letters for the rendering of long /s/: *bu-ús*-[s]*u-ri-im* (AbB 10, 185:5) and *i-ša-ás-sú-ú* (AbB 4, 117:10). The former, followed by a CV sign of the S-series (SU) was already mentioned in 4.2.3.2 as being one of the lexemes observed in Goetze 1958 (*bussurtum*[804]) to be consistently rendered with S-signs (see section 4.2.2.1). The latter, also from a letter sent by Lu-Ninurta[805], combines S- and Z-spellings (ÁŠ-ZU) in a form of the predicate *šasûm*. This orthography, repeated in AbB 2, 97 is explained by Sommerfeld (2006) as follows:

> [die] Kombination von -ás mit -sú (ZU), also einem Zeichen der {Z}-Gruppe, ist wohl als Schreib- oder Kopierfehler zu werten, denn die nur geringfügig unterschiedenen Zeichen SU and ZU können leicht verwechselt werden. Eine solche Erklärung ist aber nicht möglich bei *ta-na-ás-sà-ah* (10, 159, 22) mit der Zeichenfolge -ÁŠ-ZA. Dieses einzige unzweifelhafte Beispiel in AbB 1-13 für die Kombination von -ás mit einem Zeichen der {Z}-Gruppe findet sich in einem Brief, den der Bearbeiter Kraus mit der Bemerkung „sorgfältigste Schrift" versehen hat, muß also intendiert sein. (Sommerfeld 2006, 370).

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[801] According to B. Fiette, Zababa-naṣir was 'un militaire' (Fiette 2016, 157, note 7). Although he refers to Sin-iddinam as his superior (*šāpiria*) his association with Larsa is not clear.

[802] See R. de Boer's comments in Archibab; for UET 5, 80: 'Perhaps this text is a school letter, note the mistakes and the fact that the instructions concerning the capture of the slave are repeated' (http://www.archibab.fr/4DCGI/listestextes3.htm?WebUniqueID=1447610 [accessed 01.07.2017]); and for UET 5, 83: http://www.archibab.fr/4DCGI/listestextes3.htm?WebUniqueID=1280925 [accessed 01.07.2017].

[803] In the rest of letters from AbB not included in ACCOB, *šuatu* occurs in AbB 1, 142:6; AbB 2, 88:17; AbB 2, 88:20; AbB 2, 96:26; AbB 2, 99:8; AbB 6, 1:22; AbB 6, 10:9; AbB 6, 217:22; AbB 7, 100:5'; AbB 7, 113:6'; AbB 7, 122:18, 22 and 24; AbB 7, 152:7; AbB 7, 167:9, 16 and 19; AbB 8, 71:14; AbB 9, 155:18; AbB 10, 13:12 and 17; AbB 12, 102:22; AbB 13, 60:17 and 20 and AbB 10, 158:12.

[804] Goetze 1958, 140.

[805] Unlike the letter from Lu-Ninurta including the form *šu-a-tu*, this letter (AbB 4, 117) presents typical southern orthographic signs, such as the spelling *pi* for /pi/.

However, regardless of possible similar instances from ACCOB located in damaged parts of tablets[806], the combination of the sign *ús* (S-series) and the grapheme ZA occurs in ACCOB in the following cases:

- *pu-ru-ús-sà-am* (JCS 24 63:15‘), in a letter related to the Diyala region, from the time of Ibal-pi-El II,
- *ús-sà-an-na-qú* (AbB 3, 16: 5 and 11), in a letter related to the northern city of Lagaba, during the reign of Samsu-iluna.

Although still relatively infrequent, these instances are not formed by the less distinguishable signs SU or ZU, but by the combination of UŠ and ZA. Furthermore, the form *ús-sà-an-na-qú* occurs twice in the same letter, what makes it less likely to be an isolated writing mistake. It is also remarkable that both letters stem from areas (especially the Diyala region, but to a lesser degree also Lagaba) characterized by the frequent use of S-signs for the rendering of /s/ in other contexts.

Other cases of combination of S- and Z-signs from AbB exist, in which *ús* is followed by *sú*: *lu-ús-sú-uh-ma* (AbB 10, 117:6) and *lu-ús-sú-ha-am* (AbB 14, 142:8).

These writings could perhaps reflect what Sommerfeld (2006) suggested for the form *ta-na-ás-sà-ah*, mentioned above:

> Liegt hier ein Beispiel für eine hyperkorrekte, prononcierte Aussprache durch Erhöhung der Komplexität -also /tanasˢsah/ statt üblichem /tanaˢssah/- vor? (Sommerfeld 2006, 370).

Nonetheless, Marduk-naṣir, the sender of AbB 3, 16 (the letter with the forms *ús-sà-an-na-qú*), presents the direct opposite combination of Z- and S-signs in *qá-as-su*, i.e. AZ-SU (AbB 3, 11:31). This combination of VC grapheme of the Z-series and CV grapheme of the S-series is also infrequent in OB letters from ACCOB[807], being only attested in *ši-pa-as-si-ka* (YOS 15, 66:4'; letter related to Sippar, Samsu-iluna) and perhaps *re-qù-us-su* (AbB 11, 153:20; Nippur; however, the last sign resembles the sign ZU in the copy PBS 1/2, n.3)[808]. If the reading of the signs is correct, the occurrence of both uncommon types of combination of signs Z-S and S-Z in the letters from the one individual sender, Marduk-naṣir, could be argued to illustrate a phonetic distinction between the sibilants rendered in *ús-sà-an-na-qú* and *qá-as-su*. Thus, while the first seems to originate in the progressive assimilation of /t/ from **ustannaqu*[809], the second is the result of a regressive assimilation of /t/ form **qāt-šu*. This agrees with the position of the Z-sign (believed to render an affricate phoneme /t͡s/) on the first or the second syllabogram of the pair VC-CV (i.e., *[ust͡san:aqu] vs. *[qa:t͡ssu]).

However, the lack of further evidence in OB letters for a hypothetical distinction between different motivations for the doubled phoneme /s/ suggests that distinctive graphic strategies in the examples from the same letter discussed above could refer instead to analogous phonological clusters. Thus, it could be plausible that the phonetic characteristics of one identical cluster in the two examples (which perhaps included some inter-consonantal affrication or other phonetic disharmony) were perhaps not

[806] See [á]*s-sú-uh-ma* (AbB 8, 7:12) and *ú-da-ar-ra-ás-s*[ú(?)] in VS 22, 92:11.
[807] Naturally, due to the lack of alternative variant for /is/ (outside the Diyala region), the combination of the sign IZ plus CV sign of the S-series in northern- or southern-related letters are not considered here.
[808] See Table 48 in section 4.2.3.2. Another possible instance is [ni-ka-a]*s-s*[i]-*šu-nu* (AbB 10, 59:11). See, however, the form AZ-ZU: *ni-ka-as-sú-šu*-[nu(?)] in the same letter (line 14).
[809] Interpreted by Frankena as “ein Durativ des Dt-Stammes von *sanāqum*“ (Frankena 1978, 56).

straightforwardly segmented into two conventional syllabograms by the scribe(s). Nevertheless, the form *qá-as-su* can also illustrate a case of failing to distinguish the similar graphic shape of the signs SU and ZU. In this regard, it should be also noticed that the same letter that contains the form *qá-as-su* (AbB 3, 11), contains also a combination of Z-signs in a form of the predicate *šasûm*: *ta-ša-as-sú* (AZ-ZU, line 14), and an uncommon instance (for a northern-related middle OB letter) of a word-final VC sign of the Z-series in *i-pa-ra-as* (line 46).

In sum, the VC graphemes denoting segments with /s/ in the Diyala area, the northern- and the southern-related letters of the corpus differ notably in their use of Z- or S-spellings. While the Diyala region shows a greater number of S-signs (except in early OB texts), southern texts show a preference for Z-signs. S-spellings in this group are sporadic and occur mostly in middle OB texts or text of uncertain date, some of which markedly present orthographic peculiarities among the southern group of letters in ACCOB.

4.4.2 Chronological constraints (northern-related letters)

As shown in figures 41 and 42, northern letters present a clear distribution of VC signs of the Z- and S-series according to whether they occur in VC-CV graphic constructions rendering doubled /s/ (Z-spelllings) or they represent short /s/ in syllable coda (S-signs).

The northern-related group of letters is the only regional category in ACCOB that is attested for the late OB period. On the other hand, it is no possible to observe a long chronological development of the use of VC signs for /s/ within this group because the early OB letters in the group do not contain examples of VC signs, except for the sign IZ in *te-es-li-tu-um-ma* (IM 49274 [Sumer 23]:26) and perhaps *ka-as*?*-ap*?*-ša*? (IM 49253 [Sumer 23]:12).

Regarding the middle OB period, the signs *as* and *us* (i.e., the Z-signs AZ and UZ) occur almost exclusively followed by CV-signs of the Z-series in northern-related letters: *as*-Z-signs in 37 occasions[810] and 7 cases of *us*-Z-signs[811]. The few exceptions to this pattern in which the Z-signs AZ and UZ occur in the representation of short /s/ in middle OB texts related to the North are shown in Table 57, below:

[810] *wa-ar-ka-as-sú* (AbB 2, 19:9); *i-na-as-sà-ah* (AbB 2, 4:10); *i-na-as-sà-hu* (AbB 2, 4:10); *wa-ar-ka-as-sú-nu* (AbB 2, 76:11); *ta-ša-as-sú* (Abb 3, 11:14); *as-sú-uh*-[k]*a* (AbB 3, 11:7); *ta-as-sà-na-hu-ri* (AbB 3, 15:15); *ka-qá-as-sú* (AbB 3, 3:24); *aš-ša-as-sú* (AbB 3, 52:17); *qá-as-sú* (AbB 3, 82:7); *sí-ik-ka-as-sú-nu* (AbB 4, 103:18); *sí-ik-ka-as-s*[ú] (AbB 4, 41:14); *sí-ik-ka-as-sú* (AbB 4, 41:24); *sí-ik-ka-as-sú* (AbB 4, 77:29); *ta-ša-as-s*[í] (AbB 8, 134:11); *i-ša-as-sí* (AbB 8, 134:13); *ʿú-maʾ*-[a]*s-sà-h*[u] (AbB 8, 149:10); *i-ša-as-sú* (AbB 8, 149:19); *um-ta-as-sà-ah* (AbB 8, 149:22); *ta-as-sà-an-qú* (AbB 9, 194:11); *in-na-as-s*[à]*-h*[u] (AbB 9, 194:24); *ta-as-sà-n*[a-hu-ur] (AbB 9, 57:16); *az-zu-as-sú-nu-ši-im* (AbB 9, 92:16); *ni-ka-as-sú-šu-*[nu(?)] (AbB 10, 59:14); [w]*a-ar-ka-as-sú-nu* (AbB 13, 10;9); *ak-ta-as-sí-ip-šum* (AbB 13, 21:9); *a-wa-as-sú* (AbB 13, 41:22); *i-na-as-sà-ka-an-ni* (Edubba 7, 94:16); *ʿas*?ʾ*-sú*?*-ú* (Edubba 7, 98:13); *as-sí* (Edubba 7, 98:22); *aš-ša-as-*[s]*ú* (RA 53, D 11:7); *a-ha-as-sú* (RA 53, D 11:8); *wa-ar-ka-as-s*[ú] (RA 53, D 21:19); *ṣú-ba-as-sú* (RA 53, D 31:13); [ta-aṣ-ba-a]*s-sú-ma* (RA 53, D 43:23); *nu-ma-as-sú* (RA 90, p.123:21) and *nu-ma-as-sú* (RA 90, p.123:9).

[811] *zu-us-sú-nu-ši-im* (AbB 4, 12:17); [ri-q]*ú-u*[s]*-sú* (AbB 5, 82:6'); *us-sà-ak-ʿkaʾ-pu* (AbB 8, 132:17); *wa-aš-bu-us-sú* (AbB 13, 21:13); *ba-al-ṭú-us-sú* (AbB 13, 21:7); *re-qú-us-sú-ma* (ARM 6, 52:20) and the uncertain [hu-u]*s*-[s]*ú*-[s]*i-ka* (ARM 28, 1:4').

Table 57: Instances of the signs us *and as in northern-related texts in ACCOB not followed by a Z- or S-sign of the CV type*[812].

N.	Form	Letter	Sender
1	*a-pa-sa-as*	AbB 14, 66:20	Šamaš-naṣir II
2	*i-pa-ra-as*	AbB 3, 11:46	Marduk-naṣir
3	*li-ip-ru-us*	FM 6, 10:19	Mar-Ištar et al.

Among the shown in the table, it is worth noting that the Z-sign *as* that apparently occurs in word-final position of the form *a-pa-sa-as* (n. one in the table) contrast with the use of another S-sign in the same word (*sa*) 'irregularly' rendering a geminated /s/[813]. Moreover, the location of the sign *as* in *a-pa-sa-as* on the cuneiform tablet shows a considerable space to its right before the end of the line, which suggests that another sign could have been either planned after *as* but left unwritten or erased.

While VC signs of the Z-series appear in northern-related letters mainly in combination with CV graphemes denoting long /s/, the signs *ús* and *ás*, occur primarily in the representation of short /s/. Nevertheless, ÁŠ also occurs four times followed by CV graphemes of the S-series in northern-related letters, all of them related to archives in Lagaba and the Lower Yahrurum:

Table 58: Instances of VC signs of the S-series in northern-related letters from ACCOB followed by CV signs of the S-series.

N.	Form	Letter	Sender	Area
1	*i-ša-ás-si*	AbB 8, 136:10	Marduk-naṣir IV	Lower Yahrurum
2	*ta-ás-su-hu*	AbB 14, 69:22	Šamaš-naṣir II	Lower Yahrurum
3	[n]*i-ka-ás-si*	AbB 8, 148:25	Belšunu	Lagaba
4	*ša-na-ás-su*	AbB 14, 97:10	Lumur-ša-Marduk	Lower Yahrurum

As seen in section 4.2, the letters from the archive of the Lower Yahrurum and some individuals from Lagaba (especially Belšunu) are salient within the group of middle OB northern letters due to the widespread use of S-signs in varied morpho-phonological contexts, including doubled /s/. This can be associated with the occurrence of S-spellings of the VC type in the letters from Table 58, suggesting that the process towards complete substitution of Z-signs for S-signs in the rendering of /s/ was more advanced in the letters from these individuals.

Regarding late OB, the northern letters in the corpus do not vary substantially in their distribution of the variable (s,z) for VC signs, in comparison to the data retrieved for middle OB in ACCOB; AZ and UZ continue to occur associated with the representation of long

[812] The uncertain form *ka-as*?*-ap*?*-ša*? (IM 49253 [Sumer 23]:12) is not included.

[813] The form *a-pa-**sa**-as* is understood as a present tense form of the predicate *pasāsum* 'to cancel'; therefore, a geminated second consonant is to be expected: *apa**ss**as*. Notice, however, the use of a 'regular' Z-sign for a doubled /s/ in the spelling of another present tense predicate in the same letter: *ta-na-**sà**-ah-šu*, for *tana**ss**ahšu* (AbB 14, 66:23).

/s/[814]; IZ is the only sign attested for the cluster /is/; and the S-signs ÁŠ and UŠ represent most of the cases of /s/ in VC signs[815].

4.4.3 Conclusions

The distribution of VC signs for the variable (s,z) in the letters from ACCOB shows correlation with the distribution of graphemes of the CV type for doubled and non-initial short /s/. In both types of VC and CV syllabograms, Z-signs occur mainly in the representation of long /s/ everywhere in the corpus, with the exception of the Diyala region and certain northern letters (especially those in the corpus related to archives in the Lower Yahrurum and Lagaba), where S-signs are favoured in most morpho-phonological environments. Besides this, the most relevant variable that separates the graphic representation of short /s/ in VC signs, as was also noted for non-initial /s/ in CV signs, is the preference for Z-spellings in southern-related letters (e.g. *pu-ru-us*) against a clear occurrence of S-spellings in northern-related texts (e.g. *pu-ru-ús*).

Such regular distribution of orthographies associated with two different series of graphemes (S-signs and Z-signs) supports the assumption that two distinctive phonetic realizations of /s/ were marked in writing, also for syllable-coda /s/. For the northern region, where the allophonic pattern that illustrates an intermediate stage of change (possibly deaffrication) is best attested, VC signs that do not combine with CV for the rendering of long /s/ are consistently rendered by graphemes of the S-series. This conforms to the idea expressed in Streck 2006 that syllable-final /s/ was pronounced fricative prior to other morpho-phonological environments. This is certainly the case compared with CV signs rendering word-initial /s/ or for long /s/. However, it is difficult to assess whether S-signs occur earlier or more prominently either in word-final /s/ or in non-initial short /s/. Both cases present Z-signs in early OB letters and are, nevertheless clearly rendered by S-signs in middle OB (except in southern-related letters). The different amount of evidence for both cases, based partly in the impossibility of accounting for VC signs for /is/ (invariably rendered by a single grapheme: IZ), prevents any further fruitful comparison from the data gathered in the ACCOB corpus.

4.5 Final remarks about the representation of /s/ in OB letters

The data collected from 1800 letters in the ACCOB corpus manifest the rich variety of orthographic conventions used in Old Babylonian written documents of the epistolary genre for the representation of the phonemic abstraction conventionally rendered /s/. However, the study of the distribution of competing spellings represented by consonant-vowel and vowel-consonant graphemes of the S-series and Z-series (variable (s,z)), demonstrates that, as proposed by previous studies on OB texts (notably Goetze 1958,

[814] *sa-as-sú* (VS 22, 84:18); *ta-as-sú-uk* (VS 22, 83:11); *iṣ-ba-as-sú-m*[a] (VS 22, 90:4); [u]*s-sú-ri-im-ma* (AbB 12, 72:29); *ú-us-sà-ʿarʾ* (AbB 11, 102:9); *mar-ṣú-us-sú* (AbB 9, 174:6); *ri-qú-us-sú* (AbB 5, 267:19). The only exceptions to this are: *i-ša-ás-su-ú* (AbB 12, 2:21) and perhaps *ú-da-ar-ra-ás-s*[*ú*(?)] (VS 22, 92:11).

[815] *a-pa-ar-ra-ás-ma* (MHET 1/1 91 :26); *íp-pa-ʿarʾ-ra-ás-ma* (AbB 11, 102:6); *íp-pa-ar-ra-ás-ma* (AbB 11, 102:11); *iš-ta*(?)*-na-ás-*[si(?)] (AbB 10, 81:6); *i-tap-la-ás-ma* (AbB 9, 174:17); *ta-at-ta-ap-la-ás* (VS 22, 89:17); *ap-ru-ús* (MHET 1/1 89:8); *ip-ru-ús-ma* (MHET 1/1 79:21), and perhaps [á]*s-ni-*[qá-am] (AbB 6, 190:6). The only exceptions to this are *ʿa-taʾ-as-qú-ma (*MHET 1/1 89:37) and the difficult form transliterated *ú-ha-ad-da-as-ma* but left untranslated in AbB 10 (AbB 10, 171:44).

Sommerfeld 1995 and 2006, Westenholz 2006 and Streck 2006), the diversity of spellings for /s/ does not respond to random variation.

However, while relevant conclusions had already been arrived at in previous studies, the variety of factors involved in the written variation had not been contrasted against a comprehensive corpus of texts of the speechlike epistolary genre, specifically developed to mark different diatopic, diachronic and, to a lesser extent, diastratic levels. Nonetheless, it is precisely the intertwining of such multivaried factors what describes best the variety of orthographic tokens in the ACCOB corpus.

From the language-internal perspective, the data analysed corroborates the importance of morpho-phonological conditionants in the distribution of CV and VC signs of the S- and Z-systems of graphemes. As explained in Sommerfeld 1995, there is a clear tendency for etymological /s/ in non-initial position nor doubled to occur rendered by S-signs of the CV type in OB, in complementary distribution with Z-signs for related /s/ in word-initial position or for doubled consonant. Furthermore, as observed in Streck 2006, short syllable-coda /s/ is likewise more frequently represented by VC graphemes of the S-series (regardless of whether they are preceded by another consonant or they occur in intervocalic position). The evidence of these orthographic tendencies crucially imply that OB scribes of letters reflected, to a certain extent, allophonic traits in their written record. Moreover, an analogous or identical (i.e., already merged) phoneme that etymologically derived from different sources, or even different languages, is likewise noted differently (by S-signs) in specific letters where Z-signs are the default orthography for /s/ in similar morpho-phonological environments.

However, the here so-called 'allophonic pattern' does not suffice to explain the variation of the variable (s,z) found in ACCOB. One direcion of the problem resides in the chronologically and regionally diverse composition of the corpus. Thus, the analysis of the data according to extralinguistic variables suggests a temporal and geolinguistic diffusion of a phonological change that affects the representation of /s/. The S-spellings occur indeed very infrequently in the, admittedly underrepresented, early OB sub-corpus of letters, whereas it becomes prominent in middle OB. Intuitively, it can be expected that late OB letters contain a greater proportion of this orthographic trait, however, the data in ACCOB cannot provide robust evidence for this development, possibly due to the poorly represented late OB period, and the existence of particular OB archives that present more S-spellings than contemporary texts, skewing the total numbers for middle OB.

If one focuses exclusively on royal letters from the Babylonian court, it is significant that small corpora of letters from later kings present a relatively higher proportion of S-signs than the large corpus of letters sent by middle OB King Hammurabi. This also suggests that diastratic features, that could play a role in the synchronic distribution of variants of the variable (s,z) are not strong enough to prevent the spread of innovations in royal letters.

Finally, regional differences emerge form the study of sibilants in ACCOB, suggesting that the inception and spread of the complex realization of /s/ in its diverse morpho-phonological environments is uneven for the three general regions analysed. While the Diyala region, as observed in Sommerfeld 2006, presents a very frequent occurrence of VC and CV signs of the S-series, the southern area is characterized by a more conservative use of Z-signs, even for syllable-onset short /s/ in non-initial position or in syllable-coda. Although the relatively ealier chronology of southern-related texts in ACCOB is perhaps to be partly responsible for this trait, letters from the time of Rim-Sin and Hammurabi still

contain a higher number of Z-signs than roughly contemporary texts form northern territories.

These macro-level observations are in many cases complemented by micro-level remarks that highlight the saliency of orthographic exceptions within regional sub-categories of texts that point towards a correlation between regional orthographic features analysed in chapter three and the representation of the existent allophones of /s/ examined in the present chapter.

An overall account of the interrelation between the full varietal spectra of variables studied in this thesis is provided in the conclusions in chapter six.

5. PHONETIC VARIABLES OF OLD BABYLONIAN: NASALIZATION OF VOICED STOP CONSONANTS

The representation of the sibilant consonant /s/ is not the only written variation in OB texts that can be related to a phonological process of language variation and change. One further example comes from a phonological variable that transpires in the written record of some historical dialects of Akkadian: the nasalization of the first segment of geminated stop consonants. This is explained in Von Soden's reference grammar of Akkadian in the following terms:

> Die Nasalierung tritt an die Stelle einer ursprünglichen Konsonanten-Längung („Verdoppelung“) zunächst ausschliesslich bei stimmhaften Konsonanten[816]. [...] Bab. ist sie am häufigsten vor *d* (z. B. ist *inandin* “er gibt“ weitaus gebräuchlicher als *inaddin*), etwas weniger häufig vor *b* (z. B. aB *Kunbulum* < *Kubbulum* „Geknebelter“ YOS VIII S. 15) und *z* (z. B. *inanziq* < *inazziq* „er ärgert sich“). (Von Soden 1995, 41[GAG[3], §32b]).

From a chronological perspective, the nasalization of stop consonants occurs more frequently in later Babylonian dialects. According to Huehnergard (2011):

> *n*, and sometimes *m*, may appear as the result of the nasalization of double consonants, usually voiced dentals; thus, e.g., expected *-dd-* appears as *-nd-* or *-md-* . This phenomenon is sporadically attested before the OB period, is occasionally found in some OB dialects, and becomes more common in later phases of Babylonian. The most common examples are Durative forms of *nadānum.* (Huehnergard 2011, 589).

Consequently, for Middle Babylonian, Aro (1955) observes:

> Stimmhafte Geminaten werden im mB zu Nasal + einfachem Konsonant aufgelöst 1. In einigen Nomina der Form *purrusu* [...], 2. im Stadtnamen [...], 3. im Präsens vieler Verben. (Aro 1955 35).

Most of the examples offered in Aro 1955 belong to the third premise, i.e., they are verbal forms in present tense. However, Aro also mentions MB counterexamples in which the double voiced consonant is not nasalized. Moreover, he concludes that the number of examples in our (MB) texts is too small to give a complete picture of the extent of the phenomenon. Nonetheless, it is assumed that the nasalization of stop consonants is a process that develops in time:

> Im aB scheint das Phänomen erst in den Anfängen zu stecken, kommt aber schon z.B. bei den Nomina der Form *purrusu* [...] und ganz vereinzelt in den Präsensformen vor. [...] In j/spB Texten ist die Nasalierung häufig. (Aro 1955, 36).

Old Babylonian, therefore, is presented in the literature as a period in which the nasalization of the first segment of voiced geminated stops begins (or at least, occurs only sporadically), whereas it is only in MB and later periods of Akkadian when the feature is frequently attested in the written record[817].

However, none of the studies commented above replicate the observations made by Goetze (1945) about the distribution of the phonological trait within the OB record. Once again, in the seminal paper ‘The Akkadian Dialects of the Old-Babylonian Mathematical Texts’, Goetze argues that the occurrence of this phonological trait in OB texts does not distribute randomly, but according to a geographical North-South variable:

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[816] In section § 32c Von Soden explains that the nasalization of voiceless stop consonants is ‘selten und begegnet nur j/spB’ (Von Soden 1995 [GAG[3]], 41).

[817] It should be noticed that the feature of nasalization of geminated consonants is sometimes also considered as an indication to attribute a late date to Akkadian texts. In her comment of the orthography and language of the manuscripts of the story ‘Sargon, the Lion’, J. G. Westenholz mentions that ‘There are no obvious MB developments, such as the *š* to *1* before dentals or the nasalization of the dental in intervocalic position’ (J. Westenholz 1997, 95).

> In Southern Old Babylonian, a development begins which becomes more and more significant in Middle and Neo-Babylonian: the nasalization of doubled stops. One says in the North: *ina**d**din*; South: *ina**n**din* (Goetze 1945, 147) [818] [Emphasis added].

However, the examples listed in Goetze's study are only limited to four written instances representing a phoneme /n/ in the place in which an etymological /d/ would have been expected. The instances appear within groups one and three of Goetze's geographical classification of OB mathematical texts[819], being both groups believed to originate from southern Mesopotamian areas:

- Group 1 (Larsa): *i-na-an-di-kum* (YBC 4675:obv 11; rev.1); *i-na-an-di-in* (YBC 7997:rev. 8).
- Group 3 (Uruk): *mi-in-da-az-zu* (Strassburg 368:obv 1 and VAT 7535: rev 25)[820].

Unfortunately, these are all the references to the variable retrieved by Goetze from the corpus of OB mathematical texts; it is not clear whether counterexamples also occurred in the texts, either in the southern or in the northern group.

The search for orthographies marking the nasalization of the first segment of a doubled stop consonant in the ACCOB corpus of letters reveals that, as expected for the OB period, the occurrences are relatively infrequent, mounting to a total of 28 instances identified[821]. However, the distribution of the 28 cases of nasalization into the conventional regions in which the letters of the corpus are classified shows a significant skew in the data, which supports the geographical differentiation established in Goetze 1945. Thus, 21 of the instances occur in letters related to southern locations, while only seven are, in principle, related to the larger group of northern-related letters.

Table 59: Written instances showing nasalisation of voiced stop consonants in southern-related letters in ACCOB[822].

N.	Form	Letter	Sender
1	*i-na-an-di-a*	AbB 13, 6:18	[…]-ilum
2	*i-na-an-di-nu-kum*	AbB 9, 251:6	Ipquša
3	*a-na-an-di-ka*	UET 5, 10:11	Lumaya
4	*ta?-na-an-di-in*	YOS 15, 35:7	Lu-Ninurta
5	*a-na-am*?*-di-in*[823]	UET 5, 81:8	Nanni
6	*i-na-an-di-n*[u]	AbB 9, 56:9	Nur-Adad

[818] The same regional distinction is assumed by Walters (1970): 'Nasalization: The southern convention is to nasalize the -dd- into -nd-.' (Walters 1970, xxii).
[819] See Table 3 in section 3.2.2.
[820] Goetze 1945, 148-149.
[821] This account does not include N stem forms of predicates having a first radical consonant /n/ or /'/, such as *na-an-di-im* (AbB 10, 15:22: Infinitive N-stem of *nadûm* 'to throw'), in which the radical consonant /n/ is in contact with another consonant without undergoing assimilation. These forms, which occasionally co-occur with alternative variants that reflect the assimilation of radical /n/ (e.g., *nandûm* against *naddûm*), can be argued to represent instances of blocked assimilation of /n/ to a following consonant, rather than occurrences where a segment of a geminated stop consonant develops into a nasal consonant.
[822] The difficult form transliterated *t*[*a-m*]*a-an-ga-a-su* in AbB 8, 14:15' and suggested to be *t*[*a-m*]*a-an-ga-*<ra>(!)*-a-šu* in Sommerfeld's review of AbB 8 (Sommerfeld 1985 [Or 54], 506) has not been included in the list.
[823] The sign *am* follows the transliteration in Leemans 1960, 39: *a-na-am-di-in* (see also copy in UET 5). R. de Boer, however, transliterates the form: *a-na-*[*a*]*d-di-in* http://www.archibab.fr/4DCGI/listestextes3.htm?WebUniqueID=3583035 [accessed 01.07.2017].

7	*a-na-an-di-ik-ku-˹nu˺-ši-im*	JCS 21, 269 [A7535]:7	Rim-Sin
8	*a-na-an-di-ik-ku-nu-ši-im*	JCS 21, 269 [A7535]:9	Rim-Sin
9	*i-na-an-di-i-ma*	AbB 8, 14:18	Rim-Sin-Enlil-kurgalani
10	*in-na-an-di-in*	AbB 14, 55:12	Ṣilli-Šamaš
11	*ta-ma-an-ga-a*[r-š]*u*	AbB 11, 11:17	Šamaš-kinam-ide
12	*ta-na-an-di-iš-šum*	AbB 14, 147:13	Sin-muballiṭ II
13	*ta-na-an-di-na-ni-a-ši-im*	AbB 11, 194:12	Sin-muballiṭ
14	*i-na-an-di-nu-šu-nu-ši-im-ma*	AbB 11, 194:22	Sin-muballiṭ
15	*ta-na-a*[n-di-ni]	AbB 11, 149:29	Unknown IX
16	*a-na-an-di-iš-šu*	AbB 5, 172:12	Unknown V
17	*ta-na-an-zi-qá-nim*	AbB 5, 172:13	Unknown V
18	*ta-na-an-di-in-m*[a]	AbB 5, 26:6	Unknown
19	*ta-na-*[a]*n-di-in-ma*	AbB 5, 26:9	Unknown
20	*˹ta˺-na-an-d*[i]	AbB 11, 15:19	Ur-šulpae
21	*in-na-an-di*	AbB 10, 175:21	Za-[…]

Table 59, above, lists the instances occurring in southern-related texts in the corpus. All these tokens refer to predicates: mostly inflected forms of the verbs *nadānum* 'give' and *nadûm* 'throw', but also *magārum* 'agree' and *nazāqum* 'worry'[824].

Moreover, the seven remaining instances in which the spelling *n* occurs in place of an expected doubled stop consonant in letters associated with northern locations (see Table 60, below) occur in texts with outstanding features among other northern letters:

Table 60: Written instances showing nasalisation of voiced stop consonants in letters not included in the southern-related group in ACCOB

N.	Form	Letter	Sender	Related area
1	*ta-na-an-zi-iq*	AbB 10, 8:5	Dan-Irra	Kiš?
2	*na-ma-an-di-im*[825]	AbB 10, 8:11	Dan-Irra;	Kiš?
3	*mu-un-da-šu-nu-ši-im-ma*	AbB 10, 74:9	Iddiya	Lagaba?
4	*im-ma-an-da-du-ma*	AbB 10, 94:23	Qerub-Marduk	Kiš?
5	*ku-nun-ki-ia*	OBTIV 13:6	Sin-eribam	Diyala
6	*ma-an-za-áz-ti-šu-nu*	AbB 2, 146:7	Sin-iddinam	Bab / Larsa
7	*ma-an-za-aš-ti-šu-nu*	AbB 13, 28:11	Hammurabi	Babylon

- The instances n. 1 and 2 occur in a letter initially classified in association to the city of Kiš (archive of Gimil-Marduk, see Kraus 1985 [AbB 10], xvii). However, the letter has been already mentioned in the present study because of the existence in its body of text of orthographic features associated to southern practices, such as the use of the sign DU for *ṭù* in *li-ba-al-li-ṭù-ka* (AbB 10, 8:4) and the S-spelling of the term *šittum* (see comments to table 40 in section 4.2.2.1).

[824] As for the rest of the orthographic and linguistic variables examined in the present study, personal names, names of deities and geographical names are not considered in the survey.

[825] The form *namaddum* or *namandum*, translated as 'Ein Messgefäss' by F. Kraus (Kraus 1985 [AbB 10], 15) is derived from the verb *madādum* 'measure out'.

- The letter that includes the instance n. 3, an imperative from of the verb *madādum*[826], was also only tentatively associated to the northern location of Lagaba[827]. However, it also features an idiosyncratic orthography that makes it a salient letter within the northern-related sub-corpus in ACCOB: (1) the prepositional clause *i-ti* 'with'+pronominal suffix (AbB 10, 74:12) with no graphic rendering of a double consonant /t/ is characteristic of early OB letters and occurs only 6 times in ACCOB in letters for middle OB (five of them in two letters related to Larsa[828]); (2) the sign *qù* (AbB 10, 74:16) occurs only in eight more occasions in ACCOB, always in letters related to the South[829] (see section 3.5.2).
- Instance n. 5, *ku-nun-ki-ia*, occurs in a letter related to the Diyala region that has been suggested to be a scholar exercise[830]. Similar content is found in duplicates letters AbB 5, 30 and 46 where the form is written *ku-nu-uk-ki-ia*, and in duplicate letters AbB 5, 221 and 236 where the form is written *ku-nu-ki-ia*[831]. The spelling of this form contains also the only phonographic use of the sign *nun* in the ACCOB corpus that does not serve to render the geographical name Ešnunna.
- Finally, one letter from King Hammurabi and one letter from his official Sin-iddinam (who, although was probably based in Larsa, has been conventionally included in the northern-related group of letters for his possible northern origins and links[832]) present the same form *mazzaztum* 'post', which is written without nasalization of *z* in other three letters from Hammurabi[833]. A similar lexeme *ma-an-za-za-n*[u-tim] occurs in a contract from Babylon dated to the reign of Samsu-iluna (AUCT 4 85:5). Other lexemes derived ultimately from the same root occur frequently in OB documents spelled with a sign denoting /n/ (see the form *ma-an-za-az-ti*, which occurs nine times in a list from Kiš [AJSL 33 26]; or *ma-an-za-za-nu-ti* in a document from Ebla [TM.79.Q.173 (Kupper, Akkadica 126, 46-47)]). The etymology of the verb *izuzzum* could perhaps be related to the apparent spread of nasal consonants in words derived from this predicate. Thus, according to J. Huehnergard:

> 'This verb […] was originally a II-*w* verb **zazûm* b (a), that appeared primarily in the N stem, thus Durative *izzâz*, Preterite *izzīz*. A number of the forms were reinterpreted by speakers, and a partly irregular paradigm resulted.' (Huehnergard 2011, 450).

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[826] About the nasalization of this form, Kouwenberg (2010) points out: 'From a different category [compared to the geminate of the imperfective] comes the imperative Sg Masc *mu-un-da-šu-nu-ši-im* AbB 10, 74:9 (OB) 'measure out to them!' from *madādu* (normally *mudda-*).' (Kouwenberg 2010, 469).

[827] See Sallaberger 1999, 35 and the remark 'Lieu de découverte: Lagaba (?)' in Archibab: http://www.archibab.fr/4DCGI/listestextes3.htm?WebUniqueID=3617905 [accessed 01.07.2017].

[828] AbB 9, 112:18; AbB 12, 78: 15; 17; 33 and 36.

[829] AbB 4, 138:9; AbB 4, 154:26; AbB 5, 159:15'; AbB 10, 69:21 and AbB 11, 15:7; AbB 11, 153:20; AbB 14, 165:14 and AbB 14, 205:25. It should be noticed, however, that the sign *qù* also occurs in other letters from AbB that cannot be straightforwardly associated with a southern region (see section 3.5.2).

[830] See M. Béranger's comment in Archibab: 'Exercice scolaire cf. AbB 5 30, AbB 5 46, AbB 5 236'. http://www.archibab.fr/4DCGI/listestextes3.htm?WebUniqueID=3758441 [accessed 01.07.2017].

[831] Only in AbB 5, 236; the form in AbB 5, 221 is broken: *ku-n*[*u*(?)-(*uk*(?))-*ki*(?)-*ia*(?)].

[832] See Van de Mieroop 1990, 90-94 and Charpin 2003: "On voit donc que Sîn-iddinam n'aurait pas été un Larséen rallié au vainqueur babylonien" (Charpin 2003 [NABU], 1). Furthermore, some of his own letters seem to have been sent from Babylon (see e.g., notes to letters AbB 4, 132 and AbB 2, 146 in Archibab: 'Lieu de rédaction: Babilim' http://www.archibab.fr/4DCGI/listestextes3.htm?WebUniqueID=591683 [accessed 01.07.2017]).

[833] AbB 2, 17:16; AbB 2, 42:27 and AbB 13, 10:6.

Among other explanations for the occurrence of a nasal consonant /n/ in substantives derived from this root in texts where other types of nasalization are not common, it is perhaps plausible that they are reflect an original N-stem consonant that in particular frozen substantives did not underwent assimilation with the radical consonant /z/.

It is nevertheless significant that, despite the much larger number of letters from northern locations in ACCOB, all of the few occurrences of nasalization of geminated voiced consonant in the northern-related group correspond to substantives or verbal forms such as *madādum*, but never to the verb *nadānum*, the most frequently attested form with the phonological trait in ACCOB, and probably in OB texts[834].

On the other hand, it is assumed that also the southern examples of nasalised stop consonants are relatively infrequent in OB. In order to assess this view, Table 61, below, presents together all the counterexamples from southern-related letters in ACCOB in which a verbal form from the predicates attested in Table 59 (*nadānum, madādum, nadûm, magārum* and *nazāqum*) occur with NOT a nasalised double stop consonant.

Table 61: Instances of verbal forms of the predicates nadānum*,* madādum*,* nadûm*,* magārum *and* nazāqum *in southern-related texts from ACCOB, in which double stop consonants do not present nasalization.*

N.	Form	Letter	Sender
1	*ʾiʾ-na-d*[i]-*i-ma*	AbB 13, 55:10	Ahum
2	*ʾtaʾ-na-di-i*[n]	AbB 2, 129:12	Ahum
3	*ta-na-di-in*	AbB 2, 129:19	Ahum
4	*ta-na-di-in-ma*	AbB 2, 127:10	Ahum
5	*a-na-di-in*-[ma(?)]	AbB 5, 173:14	Ali-ahati
6	*ta-na-di*	AbB 11, 178:27	Babaki
7	*i-n*[a]-*zi-iq*	AbB 14, 88:14	Dadaya
8	*ta-na-ad*-[…]	AbB 5, 40:7'	Eri-[…]
9	[a-n]*a-ʾdiʾ-na-ku-um*	FAOS 2, 154:11	Ibni-šadum
10	*a-na-di-kum*	FAOS 2, 164:12	Ibni-šadum
11	*i-na-a-di*	FAOS 2, 154:19	Ibni-šadum
12	*ta-na-a-di*	FAOS 2, 154:26	Ibni-šadum
13	*ta-na-di-nu-šum*	FAOS 2, 168:10	Ibni-šadum
14	*it-ta-na-ad-di-nu*	AbB 14, 144:13	Ili-iddinam
15	*ta-na-di*	AbB 9, 17:18	Ilima-Ile
16	*i-na-zi-iq*	AbB 5, 42:3'	Ipiq-Ištar
17	*i-na-di-ki-im*	TCVP III 4:7	Ipqu-Sin
18	*ta-na-di-in*	TCVP III, 1:11	Išar-kubi II
19	*ta-na-di-nam-ma*	AbB 14, 115:25	Išumuatum
20	*ta-na-ad-d*[i-in]	AbB 5, 41:15	Jakun-[...]
21	*ta-na-di-in*	TCVP III, 3:9	Kazirum
22	*a-na-di-ma*	AbB 9, 220:11	Lu-igisa
23	*i-na-ad-di-in*	AbB 11, 26:13	Lu-Ninsianna
24	[i(?)-n]*a*(?)-*a*[d]-*di-nam-m*[a](?)	AbB 8, 73:11	Lu-Ninurta

[834] See Von Soden (1995): ‚[Die Nasalierung] Bab. ist sie am häufigsten vor d (z.B. ist *inandin* „er gibt" weitaus gebräuchlicher als *inaddin*)'. (Von Soden 1995 [GAG3, §32b], 41).

25	[ta]-*na-ad-di-iš-šu-nu-ši-im-ma*	AbB 4, 52:16	Lu-Ninurta
26	*i-na-ad-di-iš-šu*	AbB 4, 68:23	Lu-Ninurta
27	*in-na-ad-di-in-m*[a]	AbB 4, 68:40	Lu-Ninurta
28	*ta-ma-ga-ar-šu-nu-ti*	AbB 4, 50:10	Lu-Ninurta
29	*ta-na-ad-di-na*	AbB 4, 129:10	Lu-Ninurta
30	*ta-na-di-in*	AbB 4, 125:12	Lu-Ninurta
31	*ta-na-di-ni-i*	AbB 9, 229:11	Marduk-naṣir
32	*ta-na-ad-di-in*	AbB 9, 198:9	Munawwirum
33	[t]*a-na-di-i*	UET 5, 65:22	Nanna-[...]
34	*i-na-d*[i]-*i*[n]	FAOS 2, 151:13	Nannazimu
35	*i-na-di-ku-nu-ši-im*	YOS 15, 21:22	Rim-Sin
36	*ta-na-di-in*	AbB 14, 111:53	Rim-Sin-[...]-šu
37	*ta-ma-ga-ra*	ABIM 26:29'	Rim-Sin-Enlil-kurgalani
38	*i-na-ad-di-i-nu*	YOS 15, 23:29	Rim-Sin-Ninurta-uballissu
39	*ta-na-ad-di-i-nu*	YOS 15, 23:14	Rim-Sin-Ninurta-uballissu
40	*i-ma-ga-ru-ka*	AbB 11, 138:8	Šamaš-gamil
41	*ta-na-di-iš*	AbB 11, 5:14	Šamaš-gartaš
42	[ta-n]*a-ad-di-na*	AbB 9, 19:40	Šamaš-hazir
43	*i-na-ad-di-nu*	AbB 9, 19:32	Šamaš-hazir
44	*i-na-ad-du-ú*	AbB 4, 140:18	Šamaš-hazir
45	*in-na-ad-di-nu*	AbB 4, 140:13	Šamaš-hazir
46	*ta-m*[a]-*ad-da-d*[a]	AbB 9, 19:40	Šamaš-hazir
47	*ta-na-ad-di-na*	AbB 9, 19:14	Šamaš-hazir
48	*ta-na-ad-di-na*	AbB 9, 19:34	Šamaš-hazir
49	*ta-na-ad-di-na-šum*	AbB 14, 163:23	Šamaš-hazir
50	*ta-na-di-nu-šu*	UET 5, 52:33	Šamaš-hazir
51	*i-na-ad-di-nu-ma*	AbB 9, 48:28	Šep-Sin II
52	*a-na-ad-di-in*	RA 102, 17:21	Ṣilli-Agade
53	*a-na-ad-di-in*	AbB 14, 56:22	Ṣilli-Šamaš II
54	*i-ma-ga-ru-ú*	ABIM 20:40	Ṣilli-Šamaš II
55	*in-na-di-in*	ABIM 1, 20:71	Ṣilli-Šamaš II
56	*ni-di-in*	ABIM 1, 20:22	Ṣilli-Šamaš II
57	*ni-di-in*	ABIM 1, 20:23	Ṣilli-Šamaš II
58	*ni-id-d*[i-i]*n*	ABIM 1, 20:24	Ṣilli-Šamaš II
59	*i-na-di-ku-um*	UET 5, 73:10	Sin-eribam
60	*a-na-di-nu*	UET 5, 42:9	Sin-eriš
61	*in-na-ad-di*	AbB 11, 136:13	Sin-eriš
62	*ta-na-ad-di-nam*	AbB 11, 136:6	Sin-eriš
63	*a-na-di-ik-ku-ú*	AbB 11, 175:19	Sin-išmešu
64	[t]*a-na-di-in*	AbB 5, 142:10	Sin-kašid
65	*ta-na-di-ni*	AbB 5, 180:10	Sin-magir II
66	*a-na-ʾad-diʾ-in*	RA 102, 5:15	Sin-muballiṭ
67	*ta-na-ad-di*	AbB 9, 34:23	Sin-muštal
68	*ta-na-zi-iq*	AbB 9, 34:4	Sin-muštal

69	*a-na-di-in*	AbB 11, 16:16	Sin-tappe
70	*ta-na-di-šu-nu-ši-im-ma*	YOS 15, 60:14	Sin-uselli
71	*i-na-ad-di-in*	AbB 10, 69:29	Unknown
72	*i-ma-ga-ar-ka*	AbB 11, 152:21	Unknown IX
73	*a-na-di-ik-kum*	AbB 11, 148:8'	Unknown VIII
74	*ta-na-az*(!)(ZA)*-zi-iq*	AbB 14, 206:18	Warad-Gula
75	*ta-na-di-in*	AbB 6, 78:8	Warad-Šamaš

The comparison between Table 59 and Table 61 shows that the number of nasalizations of double stop consonants in southern-related in ACCOB is smaller than the cases in which germinated consonants remains unaltered, at least at the written level. The preference for non-nasalised variants is particularly noticeable in letters from some individuals (like Šamaš-hazir) and in early OB documents from the corpus. Thus, letters from the early archives of Lagaš (instances n. 22 and 31 in Table 61, above) and Kisurra/Umma (instances n. 1-4; 9-13 and 34) and letters from Larsa dated to the reign of Sumu-El (instances n. 17 and 18) sum up to 14 of the tokens from non-nasalised double consonants in Table 61.

However, it should be noted that one case of nasalization of /d/ in a present form of the verb *nadānum* is already attested in a letter from the early OB archive of Lagaš (*i-na-an-di-nu-kum*[835]: n. 2 in Table 59). It is worth noting that this early instance of a nasalized stop consonant occurs in one of the five letters from the archive of Lu-igisa that contains the characteristic southern orthography *ṭù* (sign DU)[836]. From a later date, but still preceding the reign of Rim-Sin, there is another occurrence of nasalization (*i-na-an-di-n*[u]: number 6 in Table 59) in AbB 9, 56, a very short letter probably sent by the king Nur-Adad[837] (around middle of the XIX century BCE).

Nonetheless, the contrast between the nasalized verbal forms attested in southern-related letters (Table 59) and all the other southern instances of the same predicates where the double stop consonant remains instead unchanged (Table 61) reveals that the proportion of cases rendering the nasalization is not negligible. Indeed, the phonological feature is reflected in nearly 22% of the cases, and appears written in letters from the central administration of the time of Hammurabi[838] and in royal letters from King Rim-Sin (n. 7 and 8 in Table 59). On the other hand, although the nasalization of stop consonants in present forms of the verb *nadānum* encompasses most of the instances in the corpus, it should be noted that this is a very frequently attested predicate in OB letters. The relative proportion of nasalized forms of *nadānum* is not higher than that of scantily attested present forms of verbs such as *nazāqum* (with nasalization in one out of four of the possible instances in the corpus) or *madādum* (where the radical /d/ occurs as /n/ in one of the two possible cases in the corpus) in southern-related letters from ACCOB.

The results from the examination of the phonological phenomenon in the OB letters from ACCOB suggests, therefore, that the nasalization of a segment of doubled stop consonants is more prominent in southern-related letters (or letters with southern orthographic features), where it occurs in letters from individuals of a varied social status. The instances

[835] AbB 9, 251:6.
[836] AbB 9, 234:10: [t]*ù-ur-dam.* See section 3.3.4.1.1.
[837] See Stol's comment: 'Probably the king of Larsa' (Stol 1981 [AbB 9], 41 note 56a).
[838] In a letter from the high official Lu-Ninurta: YOS 15, 35:7 (*ta*?*-na-an-di-in*).

from other regions are very infrequent and do not seem to operate productively in inflected verbal forms.

From a phonological perspective, it is highly significant that all of the instances of nasalized stop consonant in the OB letters from ACCOB occur in doubled voiced phonemes that are preceded by another nasal consonant: mostly [na] (e.g., *i-**na**-**an**-di-i-ma*), but also [ma][839], [mu][840] or [nu][841].

The nasalization of geminated stop consonants is commonly described as a phonological process of 'dissimilation' (Von Soden 1995: 'Nasalierung (Geminatendissimilation)'[842]; see also Kouwenberg 2010, 469). Nonetheless, the data from the corpus suggests that, rather than dissimilation, a process whereby one segment of the doubled stop consonant would change to become less similar to the other segment[843], the nasalization of stop consonants in OB letters is motivated by assimilation to the nasal quality of a preceding consonant. More specifically, all the cases found in the corpus can be explained by long-distance assimilation, a phonological change by which two segments become more similar, even though they are not immediately adjacent[844]. This does not imply that all instances of nasal consonant for etymologically geminated stop consonants in the large and chronologically widespread Akkadian record are motivated by the same process. However, for the OB instances that affect productively the verbal paradigm, the data from a corpus of 1800 letters shows a significant correlation between the phonological feature of nazalisation and two types of variables (1) phonological: the trait tends to occur preceded by other nasal consonants; and (2) diatopic: the trait is statistically more frequent in southern-related OB texts.

[839] Instance n.11 in Table 59 and n. 2, 4, 6 and 7 in Table 60.
[840] Instance n. 3 in Table 60.
[841] Instance n. 5 in Table 60.
[842] Von Soden 1995, (GAG §32b), 41.
[843] A process much rarer than assimilation (Zsiga 2013, 238).
[844] Zsiga 2013, 236. See also Rose 2011.
A similar harmony to preceding nasal consonant can be argued to intervene in OB N stem instances of verbs of first radical consonant /n/ or /'/ in which assimilation of [n] with a following consonant is blocked (see examples including also an OA imperative form *nanši* [N stem of *našûm*, vs. *našši*] in Von Soden 1995 [GAG §102c], 171). Against this hypothesis, Kouwenberg (2010) interprets that the preservation of [n] in these forms is motivated by 'reasons of transparency' and is of 'a different nature' as the nasalization of doubled stop consonants in the verbal paradigm: 'the (re)appearance of the nasal in the Š and N forms mentioned above is a morphosyntactic process affecting both voiced and voiceless consonants that is aimed at maintaining transparency and therefore restricted to specific forms. The nasalization of the imperfective forms is basically a phonological process mainly affecting voiced consonants' (Kouwenberg 2010, 470). This idea however, does not account for temporal or regional variation in the data, where the ealier examples of the feature (OB) might be respond to different stimuli from later MB or NB occurrences.

6. SUMMARY OF FINDINGS AND FINAL CONCLUSIONS

The present study set out to examine the extent to which a range of written variation in the Old Babylonian correspondence from the central area of Mesopotamia relates significantly to variables implying temporal-historical (diachronic), spatial-geographical (diatopic) or individual-situational heterogeneity.

Old Babylonian is a language that, in spite of having ceased to be written and spoken thousands of years ago, has provided modern scholars with a large record of data from a sizeable array of genres that flourished in a time of substantial geo-political changes. Some dialectal varieties of OB have been already identified and described in detail, particularly those of the peripheral urban centres of Mari and Susa. However, despite early attempts to define broad linguistic dialectal areas by A. Goetze, there is not yet a full description of the palaeographic, orthographic and linguistic elements of variability within the central Mesopotamian area. The main goal of the present study has been to contribute to the understanding of the linguistic landscape of central OB by analysing the documented variation of a set of orthographic and linguistic variables, as they occur in a corpus of OB

correspondence (ACCOB) created for this purpose. The corpus contains a total of 1800 letters from one thousand individualized senders. It has been parsed and annotated for linguistic as well as for extralinguistic information, including relevant socio-historical and geographical circumstances surrounding the production or consumption of the document. Epigraphic notes or collations of transcriptions have been occasionally added to the set of features registered in the corpus for a small number of texts; however, a systematic study of the visual form of the script has not been carried out.

The question as to why variation in language is an important issue for linguistic investigation has been largely addressed in the literature following seminal work on sociolinguistics and dialectology by authors such as W. Labov or P. Trudgill, which evidenced how language change diffuses along different dimensions. These are not only concerned with internal linguistic factors, but also with regionally and socially-substantiated factors. More recently, a similar approach has been applied by historical sociolinguists to written documents, demonstrating that analyses of scribal variation in historical texts, despite the clear limitations, can also produce relevant insights into the processes of inception and spread of language change. As Romaine puts it:

> sociolinguistically speaking, it means that there is no reason for believing that language did not vary in the same patterned ways in the past as it has been observed to do today. (Romaine 1988, 1454).

In a broad chronological perspective, the study of variation in the Akkadian textual record has been previously applied to the description of some processes of language change. An illustrative example of the liaison between spelling variation and phonological change is provided by the progressive diffusion of signs of the S-set over graphemes of the Z-series to render the phoneme /s/. This development operated through a specific sequencing of changes determined by internal morpho-phonological constraints. As described in Faber 1985 and Sommerfeld 1995, the implementation of the aforementioned replacement of signs followed a consistent pattern which, in the middle Old Babylonian period, affects primarily the representation of short /s/ in non-initial position, and diffuses to other phonological environments only in later texts. The spelling practices of the OB period, therefore, evolved from a phase of regular rendering of /s/ by Z-signs to another phase in MB of conventional S-spellings, with an intermediate period of variable use of both series of graphemes. Old Babylonian, therefore, exemplifies a situation in which a seemingly random variation in the spelling of a phoneme renders in fact a consistent allophonic distinction, probably motivated by a process of deaffrication of the sibilant consonant in particular morpho-phonological circumstances. Westenholz (2006) describes the OB period as follows:

> Old Babylonian Akkadian was evidently a language in lively development between 1900 and 1600 B.C., without any fixed written norm. The closest parallels are with Old High German between 800 and 1100 A.D., or medieval Italian, in both of which we see clear strivings for a supradialectal koine as well as deeply ingrained scribal habits and conventions. Yet chronological developments as well as pronounced dialectal variation can easily be discerned in the indomitable written language. The situation reflected in the Old Babylonian texts was undoubtedly similar. (Westenholz 2006, 254).

From a synchronic standpoint, orthographic and/or linguistic variation in OB has been also habitually argued to correlate with dialectal or sociolinguistic factors. The most

comprehensible attempt to draw a distinction between a northern and a southern dialect of central OB was proposed by A. Goetze in two papers written around the middle of the twentieth century. These observations on the full varietal spectra of variables for both regions, however, have not been further systematized nor accurately re-assessed. As regards to the diaphasic dimension of the written variation, a certain OB linguistic register associated to the royal letters produced by the central administration of King Hammurabi has been appointed as a kind of standardized chancery language[845]. However, although Von Soden mentions a 'bewustten Sprachreform'[846] as the origin of such linguistic variety of OB, the distinct traits that allegedly typify the assumed language register have not been described yet.

In addition to the indication of language-specific temporal developments and socio-cultural implications, the examination of variation in Old Babylonian written documents might also offer relevant input to the debate about the methods to address the sociolinguistic study of languages in the past by confirming the existence of linguistic variation, and by showing a correlation between variation and non-linguistic variables in texts produced almost four thousand years before the present time.

It is, however, acknowledged in the present work that spelling variation per se cannot be straightforwardly associated with distinctive oral traits. It is often regarded as the result of scribal conventions of a diverse origin and nature. Nevertheless, the identification of consistency in scribal conventions, their potential association with geo-cultural networks, or even the impossibility to relate apparent free written variation with any given variables, are all indeed informative observations that can be made from the textual documentation of ancient languages. Subsequently, the diverse type of constants that govern orthographic and linguistic variation in the textual record of OB are considered here a significant object of study. The systematic analysis of these patterns can facilitate the assembly of a more nuanced image of the full varietal spectra of Old Babylonian. Variation itself is, therefore, a source of data for deeper grammatical interpretations and for a less pixelated lectal mapping of the language that can turn the description thereof into a more complex and challenging venture.

The twofold purpose of the present thesis consisted on (1) investigating the concept of central Mesopotamia dialectal area as largely homogeneous in the OB period and (2) identifying the relevance of the range of divergence found in a number of variables, primarily observed in previous literature, and its association with regional, temporal or individual-situational variables.

This primary analysis of variation with respect with to the aforementioned variables is not meant to imply that further language-internal factors are not important in the occurrence of patterns of variation. The research indicates indeed that multiple factors operate in the orthographic and linguistic variability of the textual record. Nonetheless, many aspects inherent to language variation and change, including the effects of supra-segmental traits, phonotactics, linguistic contexts or the variation in vowel qualities in the choice of certain graphemes have not been systematically addressed in the present study.

The scope of the research has been restricted to the distribution of a limited number of orthographic and linguistic features tested against a corpus of 1800 OB letters specifically created for the purpose of serving as a large sample of documents controlled for extralinguistic variables. All the texts in the corpus pertain to the same epistolary genre and

[845] Von Soden 1995 (GAG^3 §2d), 3.
[846] Ibid.

are characterised by conveying certain information about the individuals, the time or the region involved in the process of producing the documents. The representability of the data in the corpus, however, is constrained by the unbalanced proportion of letters that relate to specific areas or periods, an issue that is naturally related to the intricacies of the archaeological findings and the publication of texts' editions. The recurring lack of assured localised manuscripts, the uncertain question about (scribal) authorship, the vagueness of the geographical and chronological references of texts without archaeological record, and the potential ambiguity in the transliteration and edition of tablets entail important limitations for the research objectives of the study. However, rather than individually examining the linguistic and extralinguistic data associated with the manuscripts, the overarching goal of the study has a comparative and quantitative nature: to address the stability or instability of scribal conventions over time and across general diatopic ranges. Whilst it is admitted that the OB written record is accidental, and unbalanced, the famous description of historical linguistics by W. Labov as 'the art of making the best use of bad data'[847] can be also argued to be applicable to the Old Babylonian written record.

Notwithstanding the heterogeneous language-external sources of information utilized for the diachronic and diatopic subdivision of the corpus (such as the relation of the letters to archives, information inferred from the internal content of the letters, identification of the sender by crossed links with dated texts, etc.), a significant number of orthographic and linguistic variants in the analysed data tend co-occur in specific parts of the corpus. This suggests that the criteria for regional and temporal taxonomy of the texts maintain a non-trivial degree of relevance for the informative purposes of classification. Nonetheless, a relevant number of letters that contain variants for an orthographic or linguistic variable which differ significantly from most letters of the same group often display further exceptional traits that distinguish them further from other members of the group. A combination of conspicuos elements confirms the comparative saliency of said documents and suggests a re-assessment of their relationship with other texts among their group. Examples of letters that contain more than one feature infrequent in the sub-division where they were originally allocated are:

-The letters sent by Atahzum: originally classified into the northern group of the corpus, they contain different orthographic variants infrequent in that group such as the spelling *pi* (PI) and the exclusive use of signs DA DI and DU to render clusters with the consonant /ṭ/.

- AbB 5, 218 and Edubba 7, 77: both are also salient in the northern division for their combination of the spelling *ṭù* and the conventional orthography *aš-šum-ia*.

- Letters sent by Aha-nuta: initially grouped also in the northern set, they contain the orthographic trait *pe* and the phonetic complement *–lum* in A.ŠÀ-*lum*.

- Letter AbB 10, 8: tentatively associated to Kiš, this document includes features typically found in southern-related letters such as the sign *ṭù*, the nasalization of doubled /d/, and perhaps also the spelling of the term *šittum* 'remainder' with an initial S-sign.

- Letter AbB 10, 74: the letter features also a nasalization of geminated stop consonant and an instance of the singular spelling *qù*.

[847] Labov 1994, 11.

Among the correspondence from single individuals, some of the texts can occasionally be further singled out regarding their degree of similarity to one or another spelling and/or linguistic models. The most obvious case studied in the thesis is the compelling clustering of orthographic and linguistic traits typical of northern texts in certain letters within the large set of correspondence sent by Lu-Ninurta, a high official of King Hammurabi's administration whose letters most frequently contain southern-related traits.

Crucially, the presence among Lu-Ninurta's correspondence of elements hardly attested in northern-related letters (e.g., *pi*, *ṭù*, the phonetic complements of the type A.ŠÀ-CVC, the nasalization of double stop consonant, *aš-šum-ia*, the lexeme *unnedukkum*) does not endorse the assumption that a standardised language register was implemented in epistolary (and other) texts issued from the central administration during the reign of Hammurabi. Moreover, the well-attested correspondence sent by King Hammurabi differs sharply from the southern-like elements of texts from his high official Lu-Ninurta, even though the letters from both senders share identical addressees, topics and diaphasic circumstances. On the other hand, the royal letters from Hammurabi, despite their widespread consideration as representative of middle OB writing practices, also contain unusual spellings compared to the rest of the texts from the corpus of OB letters, such as the forms *ṭá* and *qà*, which, furthermore, are also unattested in other paradigmatic OB texts such as the laws in the stele of the Code of Hammurabi. In this respect, the assumed existence of a regular chancery language register affecting letters emanating from the central administration of Hammurabi's court must be redefined.

As expected from a study on sociolinguistics or language change in general, variation in the orthographic and linguistic features examined in the present thesis do not associate strictly with a clear-cut differentiation of documents based on geographical or chronological boundaries. Whilst conflicting forms of a single variable can co-exist even within the same document, this does not undermine the significant overall contrasts observed for some variables in a larger-scale distribution.

The analysis of a set of written features in the letters from ACCOB has evidenced a considerable range of variation in the Old Babylonian spelling practices, which, at least for the rendering of /s/ (chapter four) and the nasalization of stop consonants (chapter five), can be argued to associate with linguistic variation in the oral domain of Old Babylonian. The factors that can correlate with the distribution of specific variant traits in the corpus are often intertwined, incorporating diatopic and diachronic conditionants as well as textual or morpho-phonological constraints.

To address the multivaried circumstances involved in the distribution of variants in the corpus, the different sections of the research study have displayed first a general picture of the data segregated according to the most significant factor(s) of variability, normally geography. In a second phase, secondary potential circumstances of disparity such as chronological or lexically-bound constraints have been discussed.

6.1 Diatopic factors

Regarding the significance of geographical factors in the distribution of orthographic and linguistic elements in Old Babylonian, the data from the ACCOB corpus of letters demonstrates that a wide regional characterization of the texts into three groups (North, South and the Diyala region) proves to be a relevant factor of correlation for some traits but not for others. Figure 43, below, summarizes the combined distribution of some of the variables analysed in chapters three, four and five, according to their geographical

associations. The total number of occurrences of each variant retrieved from the ACCOB corpus is presented in a three-dimensional axis that corresponds to the trichotomic regional division of texts: North, South and Diyala. Every orthographic or linguistic trait is allocated on the chart according to the number of instances of the feature as it occurs in letters related to each of the three territories. For example, the coordinates for the location of the spelling *ṭa* (DA) indicate that it occurs in more than 50 occasions in texts related to the South ('ordinate' horizontal *y*-axis), hardy ever in the Diyala region ('applicate' vertical *z*-axis) and more than 120 times in texts related to the North ('abscissa' horizontal *x*-axis).

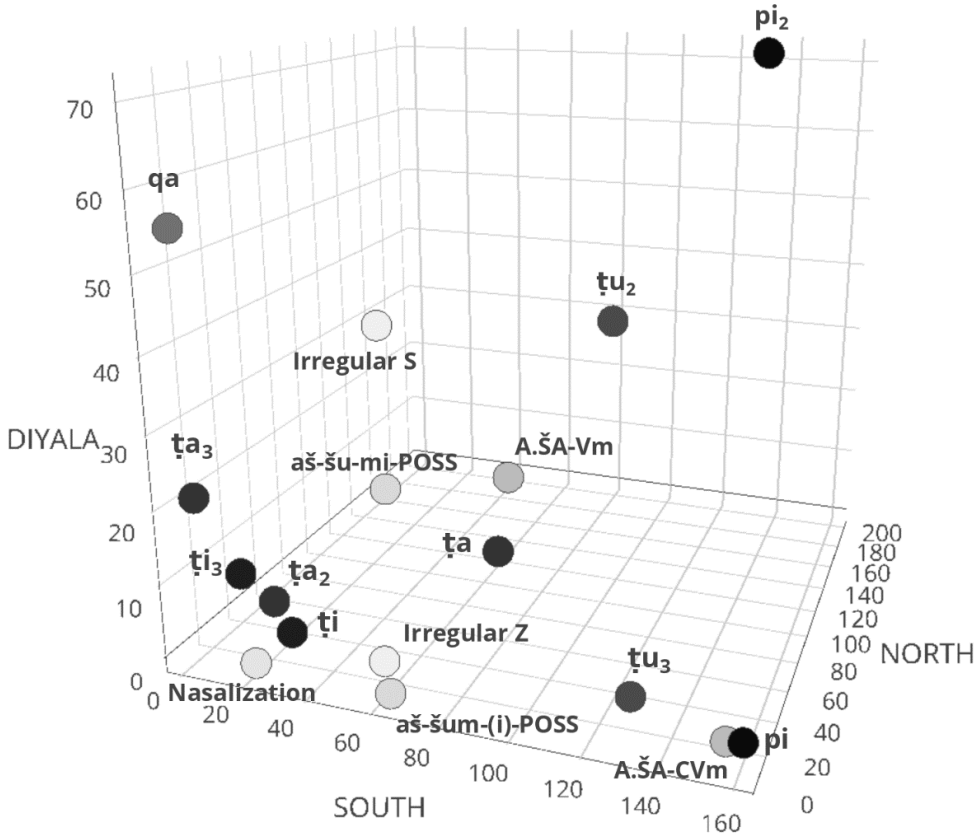

Figure 42: N. of tokens in ACCOB for orthographic and linguistic variables examined in previous chapters in relation to three diatopic sub-divisions: North, South and the Diyala region[848].

The graphic in Figure 43 helps visualize the quantitative figures for orthographic and linguistic variables examined in previous chapters, generating a general outline of how the variants distribute geographically in the corpus of OB letters. It becomes evident that some features associate more significantly to certain regional axes (North, South or Diyala) while others are more widely spread across geographical sub-sections of the corpus.

[848] The label 'nasalization' refers to the instances of nasalization of doubled consonant stops analysed in chapter five. The label 'Irregular S' marks those instances of /s/ in the corpus rendered by S-signs, when they do not comply with the allophonic pattern, i.e. in either word-initial position or for doubled consonant (instances from lexemes in which the word-initial /s/ is regarded as originating from a different etymon are not included in the account). 'Irregular Z' corresponds to those instances of /s/ in the corpus rendered by Z-signs, when they do not comply with the allophonic pattern, i.e. for non-initial short /s/.
It should be noted that the tokens of the spelling variants *pí* (BI) and *ṭú* (TU) expand far beyond the 200-mark limit for instances in the North axis (see Figure 44). The axis has been purposely reduced to a maximum score of 200 attestations to help appreciate the scope of variation of the rest of the variables.

As discussed in section 3.4.2, the dot representing the spelling *pí* (*pi*$_2$ in the graph) scores high in all three axes (i.e., regions), which makes this orthographic variant a poorly informative predictor for diatopic differentiation of OB letters.

The sign *ṭú* (*ṭu*$_2$ in the graph), although less frequent in southern-related texts than *ṭù* (*ṭu*$_3$ in the graph), also occurs frequently in texts from all the three Mesopotamian regions. However, a closer examination of the data in Chapter three has revealed that southern instances of *ṭú* are more marked than their northern counterparts: they appear mostly concentrated in early OB letters and in greeting formulae. Moreover, the real difference between the number of instances of *ṭú* in northern- and southern-related texts is not adequately captured by the graphic in Figure 43. This is caused by the fact that the graphic has been purposefully limited on its northern axis to a maximum reach of 200 tokens to preserve a small size cube that could present more effectively the distribution of variables with fewer attestations in the three regions. However, the sign *ṭú* is attested almost 500 times in the northern-related letters from ACCOB, which implies that the vast majority of the total number of instances of *ṭú* occur in northern-related letters. The real proportion of the data can be observed in Figure 44, below.

The coordinates of the sign *ṭa* (DA) appear situated in the centre of the north-south dimension. This indicates that, despite assumptions that link this orthographic feature to southern scribal practices, it is in fact the most common CV spelling for /ṭa/ in both northern- and southern-related letters in ACCOB. Nonetheless, it scores low on the vertical axis due to the prominence of the spelling *ṭà* (sign HI) in the Diyala region.

Despite its frequent attestation in royal letters from Hammurabi, the spelling *ṭá* (TA) occurs only irregularly in ACCOB, mostly in texts related to northern locations like Lagaba.

Unlike the frequency of the sign *pí* (BI) in all areas of study, the alternative spelling *pi* (PI), appears alongside the CVC type of complementation for the logogram A.ŠÀ 'field' as strongly related to the southern axis.

Other features also occur situated near the South (horizontal) axis. One can find, in decreasing number of attested instances: *ṭù*, *aš-šum*-(*i*/*mi*)-POSS, irregular Z-spellings and nasalised stops consonants. These traits are, therefore, also associated to the southern-related letters in ACCOB, with only occasional instances occurring in letters related to the North. Admittedly, these elements are not so frequently attested in the corpus as for example, the variable (pi,pí). However, in order to capture the real significance of their regional distribution in the OB letters, it is relevant to observe the contrast between these forms and their alternative spellings, when a binary orthographic opposition exists[849]. In particular, the position of the binary traits *ṭù*/*ṭú* and *aš-šum*-(*i*/*mi*)-POSS/*aš-šu-m*i-POSS shows a significantly different percentage of incidence in the northern and the southern areas. Figure 44, below, replicates the results shown in Figure 43 with a fundamental difference: it presents the real number of tokens for the spellings *ṭú* and *pí* in the corpus. To display the large divergence in the number of occurrences for these two variables in northern- and southern-related texts, the northern axis has not been limited here to a maximum score of 200 tokens. It represents the net figures for all the variants.

[849] Binary traits are marked with the same grade of grey in the graph.

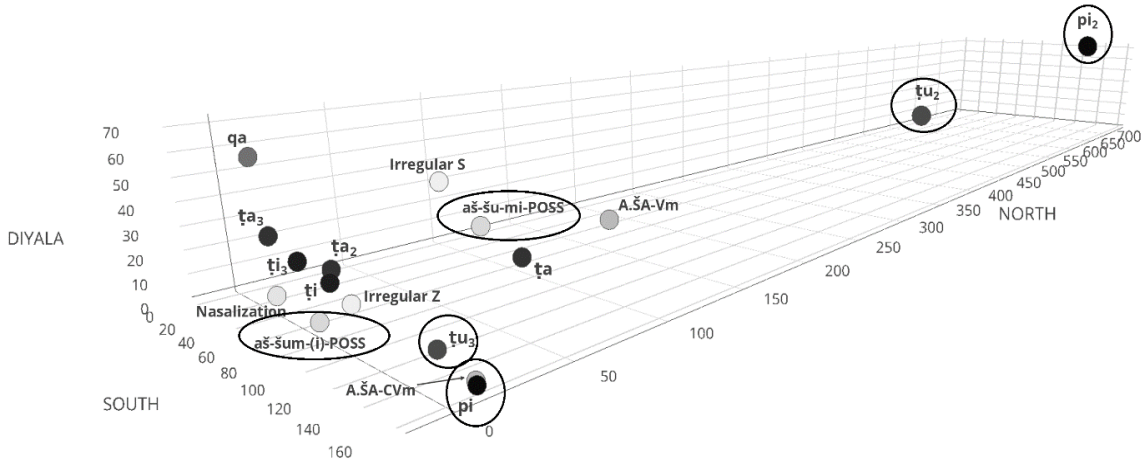

Figure 43: N. of instances of tokens in ACCOB as in Figure 41, without limiting the scope in the northern axis to a maximum of 200 instances.

The figure reveals now the fundamental divergence in the occurrence of the binary orthographic choices *ṭú*/*ṭù*, *pi*/*pí* and *aš-šum*-(*i*/*mi*)-POSS/*aš-šu-m*i-POSS, and how they strongly associate either to the northern axis or the southern axis, even though some instances can be found in both sub-divisions of letters.

On the vertical axis, corresponding to the texts related to the Diyala region, the spellings *qa* and *ṭà* (*ṭa*$_3$ in the graph) are the most distinctive traits of the area, followed by the representation of /s/ by means of 'irregular' S-signs in morpho-phonological environments where a Z-sign is predicted by the allophonic pattern. The latter appears also situated on a relatively high score on the northern axis. However, the graphic presents absolute numbers of instances rather than percentages. This skews the position of this feature towards the northern axis of the graphic, due to the disproportionate number of letters in the corpus that stem from the northern area. Nevertheless, as discussed in Chapter four, the trait of 'irregular' S-spellings for /s/ is a feature more relevant within the Diyala region than in the northern region: whilst the alternative 'regular' Z-spellings are only occasionally attested in letters related to the Diyala, they can be regarded as the most common variant found in the textual record of the larger sub-division of northern-related letters in ACCOB.

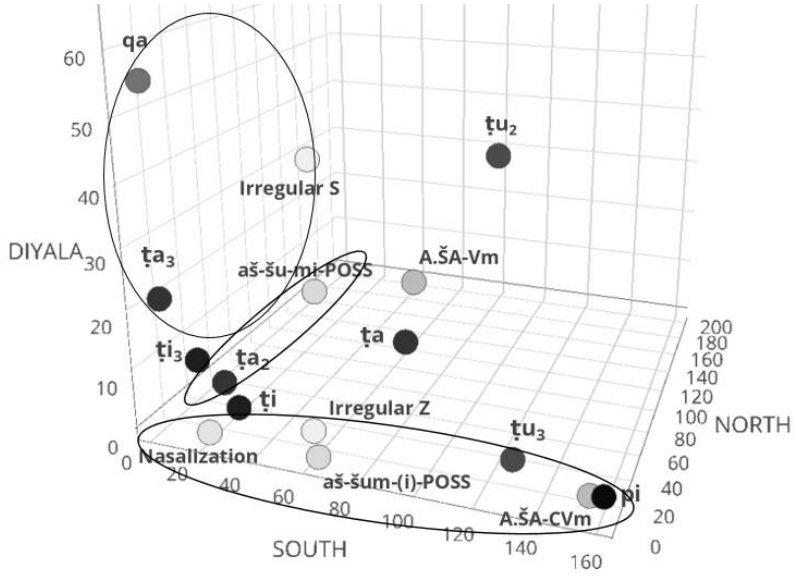

Figure 44: Clustering of features examined in chapters three to five along their most relevant association to geographical axes.

The combined presentation of the quantitative results from chapters three, four and five allows now for an assessment of the relationship between orthographic and linguistic variables. It can be argued that there exists diatopic overlapping of some of the two types of variables analysed: those that were considered to reflect more clearly variation on the linguistic domain of OB (linguistics variables), and those whose variation is less evidently related to phonological divergence in OB (orthographic variables).

Figure 45, above, highlights the traits that associate more significantly to the geographical classification assigned to letters of the corpus of OB correspondence (ACCOB):

(1) *qa*, *ṭà* and 'irregular' S-spellings for the renderings of /s/ appear mostly linked to the Diyala region;
(2) *pi*, *ṭù*, *aš-šum*-(i)-POSS, nasalization of doubled stop consonants and the preservation of Z-signs in non-initial short /s/ associate more clearly to southern Mesopotamian locations.

Regarding the southern features, although the graphics do not show the alternative variants for nasalized stop consonants or for 'irregular' Z-signs representing /s/, the data from the corpus analysed in Chapter four and Chapter five shows that whilst both features are insignificantly attested in northern-related texts, in southern-related letters they account for 22% and 55% of the spellings of the respective variables. In the case of Z-spellings, this indicates that, although the proportion of 'irregular' Z-signs is higher in southern-related OB letters than anywhere else in the corpus, the number of 'regular' S-spellings in letters from this area is not negligible. Furthermore, 'regular' S-spellings are observed to occur more steadily in later stages of the register for southern letters, which points to a progressive diffusion of the spelling that could be related to the spread of a phonological change. The fact that no late OB archives have been found in southern Mesopotamia after the reign of Samsu-iluna probably affects the overall distribution of this variable in comparison with the northern OB sub-division of letters in ACCOB.

On the other hand, some traits appear in the corpus almost exclusively associated to northern-related texts, even if they cannot be straightforwardly considered as defining characteristic of the northern group. The tokens for the spelling *aš-šu-m*i-POSS appear

almost entirely in northern-related letters. However, it should be noticed that neither this form nor *aš-šum*-(i)-POSS are attested in the letters from the Diyala region, which makes it uncertain whether this area could be associated with any of the two competing variants. The form *ṭá*, on the other hand, although far less common than *ṭa* in northern-letters occurs mostly in letters from the North, particularly in the letters from King Hammurabi.

For the general rendering of /ṭ/ by means of CV graphemes, geography is a relevant factor in the distribution of different spelling variants across the documents in ACCOB. However, the data from the corpus does not support the regional distinction initially suggested by Goetze, whereby D-signs are typically used in the South and T-signs in the North. While the signs DU for /ṭu/ and DI for /ṭe/ occur most frequently in southern-related texts (except in texts from Uruk), and TA for /ṭa/ is almost invariably linked to letters of northern origin, DA for /ṭa/ and, to a lesser extent DI for /ṭi/ are wide-spread spellings in both northern- and southern-related documents. Nonetheless, the spelling division proposed by Goetze applies to certain groups of letters. On the one hand, the correspondence sent by Hammurabi employs mostly T-signs for all CV syllabograms denoting /ṭ/. Although this orthographic system is unusual in the record, the usual reference to this group of letters in descriptions of Old Babylonian has perhaps biased the perception of the orthographic landscape of the period. On the other hand, early OB texts from southern archives also present the same preference for T-signs in the representation of /ṭ/.

The clustering of the sum of all these elements along distinctive territorial sub-divisions suggest the existence of:

(1) demarcated orthographic practices in the OB record, and

(2) dialectally differentiated traits for two variables of a linguistic nature: the rendering of the sibilant consonant |*s| and the nasalization of doubled stop consonants.

6.2 Other factors

In parallel to diatopic factors, other circumstances have been further observed to affect the distribution of the variables across the corpus of letters.

A significant use of the variant *ṭú* in southern texts was found in transliterations of the word *ṭ*/*tuppum* ‘tablet’ and in greeting formulae. The contrast between the frequent use of *ṭù* in southern letters and the parallel use of *ṭú* in the same area to render syllabically the term *ṭ*/*tuppum* suggests that, as pointed out in previous literature, the phoneme perceived in this lexeme is /t/, rather than /ṭ/. On the other hand, the alternation of *ṭú* and *ṭù* in southern-related letters also reveals that the former occurs saliently in greeting formulae, which suggests a distinctive motivation for the spelling choice that could perhaps relate to lexical diffusion or to the diffusion of scribal conventions.

Diachronic factors are further demonstrated to associate with the selection of different competing spellings in the rendering of sibilant consonants. It has been already mentioned that ‘regular’ S-spellings occur more frequently in later stages of the record of southern-related letters in ACCOB. On the other hand, the clear preference for S-signs in middle OB letters from the Diyala region contrasts with archaic and early OB texts, where, despite the fewer attested tokens retrieved, Z-spellings are well represented. The northern area follows mostly the allophonic pattern for the rendering of /s/ with the significant exception of a number of lexemes where S-signs are, by contrast, consistently used. This is observed to occur in both southern and in northern-related letters. Although it was anticipated that late

documents would present a higher frequency of S-signs in all morpho-phonological cases, no significant difference could be observed in the general account of tokens from middle and late northern OB letters. However, it has been noticed that the middle OB period (i.e., the best attested period of the corpus) includes most of the instances of the special lexemes commented above. Furthermore, this period also contains letters from archives related to the Lagaba area and the Lower Yahrurum, where S-signs occur more prominently than in the rest of middle OB data. Nonetheless, a comparison between the royal letters from King Hammurabi (XVIII century BCE) and his descendant, King Ammi-ṣaduqa (XVI century BCE), evidences a more habitual usage of S-signs for /s/ in documents from a similar diastratic level.

The analysis of linguistic variables in Chapter four and Chapter five suggests that linguistic processes that were developing in the OB period and that would result in a frequent use of S-signs for /s/ in Middle Babylonian and a generalized nasalization of doubled stop consonants, (especially in Neo-Babylonian) diffused from specific OB areas that can be localised in the north-eastern area of the Diyala in the case of the former, and in southern Mesopotamia for the latter. Furthermore, the instances of nasalised doubled consonant in the corpus suggest that, in the OB period, they associate with a specific phonological conditionant, namely, a productive long distant assimilation process with preceding nasal consonants.

6.3 Final conclusions

The quantitative and systematic account of data embedded in a comparative framework, combined with micro-level observations of individual texts and extralinguistic information, provides results that demonstrate a consistent range of variation in the spelling practices of OB letters. The distribution of different variables indicates the existence of both orthographic and linguistic distinctive traits that can be significantly related to an intertwined combination of interacting factors, among which geographical and temporal differences appear to be relevant. Language internal factors are also significantly related to some of the variables analysed: to the the nasalization of doubled stop consonants and to the diffusion of allophones for sibilant consonants according to a morpho-phonological pattern.

The assessment of assumptions about the existence of non-peripheral OB dialects and about language standardization offers a more nuanced characterization of Old Babylonian. This analysis of the complementary distribution of variables can have implications for the examination of the lectal varieties of the language; but it also provides comparative data that can be useful for the localization and dating of other OB documents, and for the study of sociolinguistic and scribal praxis in the Old Babylonian period. The diatopic and diachronic influence observed in the written variation of OB letters can be further expanded and refined with a deepened analysis of variables related to other segmental and supra-segmental language-internal factors that can qualify the elements of scribal variation in Old Babylonian described here.

Nonetheless, the present thesis offers a limited insight into these questions in the hope of providing basic steps in line with the idea that 'science progresses in subtle degrees, half-truths and chance'[850]. The research project has been conceived from the beginning as a

[850] Horvath: https://blogs.scientificamerican.com/guest-blog/the-replication-myth-shedding-light-on-one-of-sciencee28099s-dirty-little-secrets/ [accessed 01.07.2017].

statistically-controlled quantitative and qualitative reference base onto which feeding of new information and emendation of tentative data is expected to render more scientifically robust outcomes. The complementation of the signs of variation observed in the study with an examination of further palaeographical, historical and social elements, and the contrast of the data against larger corpora that include documents from different locations and from a wide variety of textual genres is anticipated to greatly advance our understanding of the nuances of the Old Babylonian language, its socio-cultural scenario, and the overall mechanism of language variation and change.

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Rodrigo Hernáiz

Studies on linguistic and orthographic variation in Old Babylonian letters

RESUMEN

La tesis investiga el grado en el que la variación lingüística y ortográfica presente en la correspondencia escrita en la región central de Mesopotamia, en época paleobabilonia, se relaciona significativamente con variables que denotan heterogeneidad temporal-histórica (diacrónica), espacial-geográfica (diatópica) o individual-situacional.

A pesar de que algunas variedades dialectales del paleobabilonio, en particular las de las zonas periféricas, ya han sido descritas en mayor o menor detalle, todavía no existe una descripción completa de la amplia gama de rasgos paleográficos, ortográficos y lingüísticos que caracteriza la lengua escrita en el núcleo central de la civilización mesopotámica en la primera mitad del segundo milenio a. e. c. El presente estudio aborda esta cuestión, analizando la manera en la que un conjunto de variables ortográficas y lingüísticas se manifiestan en un corpus de correspondencia (ACCOB) creado a tal efecto, y anotado con información tanto gramatical como extralingüística que incluye información sobre la ubicación temporal, geográfica o social de los productores de dichos documentos escritos.

La combinación de un enfoque cuantitativo para el análisis sistemático de la distribución de las variables y de un estudio detallado y contextualizado de los documentos muestra que, a pesar de las limitaciones de un estudio sociolingüístico histórico aplicado a un periodo tan antiguo, varias características ortográficas y lingüísticas aparecen asociadas de manera significativa con coordenadas regionales y/o temporales.

Las variables analizadas en el estudio presentan una descripción lingüística más matizada del acadio en el periodo paleobabilónio, de sus prácticas ortográficas y de la complejidad sociolingüística y cultural de la época.