

The Assimilation of Dentals and Sibilants with Pronominal š in Akkadian*

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The utility of a particular theory of grammar lies to a considerable extent in its ability to describe accurately and explain adequately the often quirky phenomena of natural languages. While description constitutes an essential first step in the analysis of language, special merit must be awarded to that theory that proceeds beyond this point to make sense out of a language system. In the following pages I shall examine afresh one of the strangest facets of Akkadian phonology and propose an explanation derived from the generative theory of linguistics.¹ The proof of the pudding is in the eating, and the efficacy of this theoretical approach will be in the degree of success to which the analysis clarifies and systematizes what has been a classical perplexity of Akkadian phonology.

Akkadian, as a dead language the acute phonetics of which are irretrievable,² can be subjected to phonological study with some assurance in those areas in which the writing system represents systematic alternations and historical substitutions. Cuneiform orthography does reflect the regular deletion, insertion, substitution, and assimilation of phonemes in specific linguistic environments. In these areas one can study Akkadian phonology on *terra firma* without having to depend on the potential vagaries of historical reconstructions. The case we are about to investigate involves a strange instance of assimilation.

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1 See especially N. Chomsky & M. Halle, *The Sound Pattern of English* (New York, 1968), and many subsequent presentations, some of which are cited in the ensuing notes. For a valiant pioneering effort in applying generative theory to Akkadian, see E. Reiner, *A Linguistic Analysis of Akkadian* (The Hague, 1966), hereafter abbreviated *LAA*.

2 Cf. Reiner, *LAA*, 20.

The initial phoneme of the third person pronominal suffixes in Akkadian, which is normally represented in the cuneiform script as *š*,³ undergoes a curious phonetic change when it is immediately preceded by a dental or a sibilant, including the phoneme /*š*/. Following any other phoneme /*š*/ remains *š*. Following a dental or sibilant, however, the combination dental/sibilant + pronominal *š* becomes *ss*. The change can be easily recognized in the cuneiform script. Akkadian orthography, as is by now well known to specialists, employs variant methods of writing. Morphophonemic writings represent the underlying structure of morphemes before they undergo phonological processes and are realized phonetically in speech. Phonetic writings approximate the actual spoken form.⁴ Thus, for example, the word for 'sin' is written both *arnu* and *annu* within the same dialect.⁵ We may conclude that *arnu* is a morphophonemic spelling and that *annu* is phonetic, reflecting the assimilation of /*rn*/ to [nn]. With respect to the assimilation of dental/sibilant + pronominal *š*, we find both morphophonemic and phonetic spellings, although morphophonemic writings tend to be more frequent in later periods. Compare, for example:

Morphophonemic

šu-ba-at-zu-nu =
/šubat+šunu/ =
[šubassunu]
'their abode'⁶

ip-te-qid-su =
/iptaqid+šu/ =
[ipteqissu]
'he has put him in charge'⁸

Phonetic

šú-ba-az-zu =
/šubât+šu/ =
[šubassu]
'his garment'⁷

ši-di-is-su-nu =
/šīdīt+šunu/ +
[šīdissunu]
'their provisions'⁹

It may not seem peculiar that a dental or a sibilant (other than *š*) + *š* should become *ss*. But it is striking indeed that *š* preceded by *š* should yield *ss*.¹⁰ Yet, the script leaves no doubt that such was the case. Compare, for example: *û-di-is-su* = /uddiš+šu/ 'he renovated it',¹¹ *lu-la-bi-si(-ma)* = /lulabbiš+ši/ 'let me adorn her',¹² *ru-pu-us-sa* =

3 For Old Akkadian, see the Appendix to this article.

4 On morphophonemic writing in Akkadian see especially: Reiner, *LAA*, 56; idem, "How We Read Cuneiform Texts," *JCS* 25 (1973), esp. 33-39; idem, "New Cases of Morphophonemic Spellings," *Or* 42 (1973), 35-38; and cf. I. J. Gelb, "A Note on Morphographemics," in D. Cohen, ed., *Mélanges Marcel Cohen* (The Hague, 1970), 73-77.

5 Cf. *an-nu-û-a* 'my sins' (Ebeling, *Handerhebung*, p. 142: 8) and *ar-ni* 'my sin' (ibid., p. 134:81). For the *rn* assimilation in general, see von Soden, *GAG* §35d with Ergänzung ad loc.; and for Neo-Assyrian in particular, see K. Deller, *Lautehre des Neuassyrischen* (Ph.D. dissertation: University of Vienna, 1959), 218.

6 YOS IX, 35:10; OB.

7 Kraus, *AbB*, I, 39:26; OB.

8 R. H. Pfeiffer, *State Letters of Assyria* (New Haven, 1935), no. 26: rev. 6; NA.

9 Ibid. no. 33: obv. 8; NA.

10 Cf. A. Goetze, "The Sibilants of Old Babylonian," *RA* 52 (1958), 148: "It is difficult to understand . . . why the combination of two identical sounds should have been avoided."

11 *AOB* I, p. 44, no. 4: 4.

12 Kraus, *AbB*, I, 30:23.

/rupuš+ša/ 'its width',¹³ *ka-ras-su-un* = /karaš+šun(u)/ 'their camp',¹⁴ etc. The phenomenon is particularly strange since elsewhere Akkadian tolerates sequences of šš (see below, case 7a). In fact, elsewhere the sequence of a dental + š produces šš and not ss (see below).¹⁵

The curious behavior of pronominal š in these assimilations has been explained chiefly from a diachronic, or historical, perspective. According to the widely endorsed account, the initial phoneme of the third person pronoun in Akkadian (and Proto-Semitic; see Appendix) was originally */š/. It is distinguished from š (< *θ) in the orthography of Old Akkadian,¹⁶ and perhaps, to a lesser extent, in certain dialects of Old Babylonian.¹⁷ For the most part */š/ merged with the phoneme /š/.¹⁸ Following a dental or sibilant, however, the original */š/ of the pronominal suffix led to a regressive assimilation of dental/sibilant + *š producing *šš.¹⁹ This sound was perceived as closer to ss than to šš, and so the combination of stem-final dental/sibilant + pronominal *š yielded ss in later dialects of Akkadian in which *š was no longer a discrete phoneme.²⁰ This historical analysis is problematic because it does not explain why *šš became ss only here and not in other morphological positions (such as the geminate š of the verb *našū(m), present *inašši*). Nonetheless, the difficulties in the traditional diachronic analysis need not impede our synchronic investigation.²¹ In fact, our synchronic analysis can lead to a more adequate historical explanation, to which we shall return below.

The diachronic explanation delineated above may satisfy the historical linguist, but the native Akkadian speaker had no such historical perspective. (S)he had to analyze the forms (s)he heard and induce rules in order to produce correct derivations in the most systematic

13 Gilg. XI:30.

14 Borger, *Esarh.*, p. 82: 19.

15 Correct the misinformation of O. E. Ravn, "The Substitution of -ss- for -šš- in Babylonian," *Acta Or.* 17 (1939), 322.

16 Cf. F. Thureau-Dangin, "Une lettre de l'époque de la dynastie d'Agadé," *RA* 23 (1926), 28; idem, "Observations sur la graphie des sifflantes dans l'écriture cunéiforme," *RA* 30 (1933), esp. 93; I. J. Gelb, *MAD* 2², 35f.; J. Aro, "Die semitischen Zischlaute . . .," *Or.* 28 (1959), 327; Goetze, *The Sibilants of Old Babylonian*, 138; Reiner, *LAA*, 35, 110; Ungnad-Matouš, *Grammatik*⁵, § §20a, 65a; see further the Appendix to this article.

17 For Mari, see von Soden-Röllig, *Das Akkadische Syllabar*², xxi; von Soden, *GAG* §30e; but contrast J. Aro, *OLZ* 1957, 130, who attributes orthographic variations to Amorite scribal influence. For other OB dialects, see esp. A. Goetze, "The Sibilant in Old Babylonian *nažurum*," *Or.* 6 (1937), 12-18; idem, *The Sibilants of Old Babylonian*, 137-49; contrast Aro, *Die semitischen Zischlaute*, esp. 330; von Soden, *GAG* §8i note; S. Moscati, ed., *An Introduction to the Comparative Grammar of the Semitic Languages* (Wiesbaden, 1969), §8.30. The most detailed delineation of Old Babylonian dialects and the representation of the sibilants within their orthographies is S. J. Lieberman, *The Sumerian Loanwords in Old-Babylonian Akkadian*, Vol. 1 (Missoula, 1977), 115. We may expect some further elucidation of the implicit phonological problems in the forthcoming second volume of this work.

18 For exceptional mergers of */š/ and /s/ in OB, see Aro, *Die semitischen Zischlaute*, 331.

19 Cf. Goetze, *The Sibilant in OB nažurum*, 14-15.

20 For Old Assyrian, see below.

21 Synchronic analysis seeks to explain the systematic operations of a given language, in a specific setting and time. It requires as large a bank of data as possible but not a history of the language at hand. This does not mean that knowing a language's history may not assist the analyst in his or her investigation. It does mean, however, that the underlying forms of the language may well be different from their historically prior forms and that the rules for deriving surface forms from base forms may well be different from the historical developments that produced the attested forms. See further Greenstein, *Phonological Studies in Akkadian*, 10-12.

and economical way. From the synchronic standpoint, the crucial problem is: How did the native speaker manage to sustain the distinction between dental/sibilant + radical $\check{s}$ becoming $\check{s}\check{s}$ (see examples in cases 1a, 2a, 7a below) and dental/sibilant + pronominal $\check{s}$ becoming ss (see all c cases)? It is the task of a synchronic study to determine what linguistic process served to maintain this systematic distinction.

The solutions offered by Akkadian linguists have not proved viable. Some ignore the distinction between dental/sibilant + $\check{s}$ within a morph and dental/sibilant + pronominal $\check{s}$ and offer the oversimplified generalization that /D,S/ + / $\check{s}$ / becomes [ss].²² Others add the necessary qualification that /D,S/ + / $\check{s}$ / becomes [ss] only when / $\check{s}$ / is pronominal.²³ Kuryłowicz explains that “-ss- is a *point of neutralization* of the opposition -t + $\check{s}$: - $\check{s}$ + $\check{s}$.”²⁴ This is true, however, only of the suffix assimilation; elsewhere /t $\check{s}$ / and / $\check{s}\check{s}$ / are both realized as [šš]. Ravn, who devoted an entire article to this problem,²⁵ suggests a phonetic explanation for the assimilation of $\check{s}$ + $\check{s}$ to ss and a functional explanation to account for the peculiar behavior of $\check{s}$ + pronominal $\check{s}$. He contends that $\check{s}$ + pronominal $\check{s}$ was realized as ss in order to distinguish it from /n/ + / $\check{s}$ /, which was realized as $\check{s}\check{s}$. This explanation carries little conviction. For one thing, it fails to explain—or even describe correctly—the assimilation of /D,S/ + / $\check{s}$ / within a morph to $\check{s}\check{s}$ and not ss . For another, confusions of /n/ + pronominal $\check{s}$ and / $\check{s}$ / + pronominal $\check{s}$ would be very rare. One could multiply objections, but enough said.

The most adequate formulation to date is that of Reiner, who explains that “when preceded by a morpheme boundary, i.e., as suffix, / $\check{s}$ / and the preceding dental, sibilant, or palatal (/ $\check{s}$ /) becomes long [i.e., geminate] s . . .”²⁶ Unfortunately, Reiner’s solution is unsatisfactory, for at least three reasons.

First, this solution holds that when two phonemes undergo an assimilation (that is, a phonological rule) at a morpheme boundary, the morpheme boundary occasions a different output from an assimilation process of the same phonemes within a morph. However, it is generally true for most languages that a simple morpheme boundary does not affect a phonological process.²⁷ Moreover, such a phenomenon runs counter to the evidence within Akkadian itself. As Reiner herself has pointed out,²⁸ regular assimilation processes in Akkadian occur not only within morphs but across morpheme—even word—boundaries as

22 I. J. Gelb, *Sequential Reconstruction of Proto-Akkadian*, AS 18 (Chicago, 1969), 13. “D” stands for any dental, “S” for any sibilant.

23 Cf., e.g., Ungnad-Matouš, *Grammatik*⁵, § 20c and passim; J. L. Malone, “Systematic Metathesis in Mandaic,” *Language* 47 (1971), 397, n. 7.

24 J. Kuryłowicz, *Studies in Semitic Grammar and Metrics* (Wrocław, 1972), 147, n. 18.

25 O. E. Ravn, *The Substitution*, 318–28.

26 Reiner, *LAA*, 109.

27 Cf., e.g., Chomsky & Halle, *The Sound Pattern of English*, 364; R. D. King, *Historical Linguistics and Generative Grammar* (Englewood Cliffs, N.J., 1969), 44; T. Venneman, in A. Bruck et al., eds., *Papers from the Parasession on Natural Phonology*, Chicago Linguistic Society (Chicago, 1974), 359; R. Stanley, in S. R. Anderson & P. Kiparsky, eds., *A Festschrift for Morris Halle* (New York, 1973), 185–206; L. M. Hyman, *Phonology: Theory and Analysis* (New York, 1975), 196–97; M. Kenstowicz and C. Kisseberth, *Generative Phonology: Description and Theory* (New York, 1979), 408; contrast R. T. Harms, *Introduction to Phonological Theory* (Englewood Cliffs, N.J.), 112.

28 See esp. Reiner, *New Cases of Morphophonemic Spellings*.

well.²⁹ Thus, there are attested assimilations of /r+n/ to *nn* and /m+š/ to *šš* across morpheme boundaries, corresponding to the same assimilations within morphs, as in /arnu/ 'sin' becoming *annu*³⁰ and /ḥam(i)šu/ 'five' becoming *haššu*.³¹ Never do two divergent assimilation results occur, one for morpheme boundaries and another elsewhere.

Second, according to Reiner's own system of analysis, there is a morpheme boundary between an infixed /t/ and the second stem-consonant of a verbal form. Yet, the sequence of infixed /t/ + radical /š/ becomes *šš*, not *ss* as in the case of stem-final /t/ and the *š*-suffix.

And third, the above solution views the assimilation of a dental or sibilant + pronominal *š* becoming *ss* as an isolated phenomenon in Akkadian and explains it accordingly through an ad hoc rule. It would be preferable to integrate this assimilation into the pattern of all dental/sibilant + sibilant assimilations in Akkadian, if that can be done in a natural manner.

A fresh and unbiased look at all dental/sibilant + sibilant assimilations in Akkadian can suggest a solution that is not only consistent but that also captures an important and hitherto unstated generality in Akkadian phonology. We have assumed all along that the underlying phoneme of the third person pronominal suffix is /š/. It will be helpful not to commit ourselves to /š/ as the underlying value, but, allowing the near certainty that it is a sibilant, let us label it /s_x/.

The treatment of the relevant dental or sibilant + sibilant sequences in Akkadian are presented below. It will be noted that, where possible, cuneiform spellings are given both phonetically (representing the end result of the assimilation) and morphophonemically (representing an abstract level prior to the application of phonological rules). In cases (5c) and (6c) the polyvalence of *VC* and *CVC* signs ending in a sibilant makes it impossible to discern any difference between phonetic and morphophonemic spellings.³² Lacunae in the data result from the fact that rarely in Semitic root morphemes do consonants of similar articulation occur in sequence.³³ Indeed, this fact together with the following assimilation processes indicate that Akkadian possessed a phonotactic constraint against /DS/ or /S₁S₂/ sequences.³⁴ This constraint should be viewed in conjunction with the rule of Homorganic Consonant Assimilation in Akkadian, in which consonants nearly always assimilate to a

29 Construct chains should be regarded not actually as two words but as one compound word; cf., e.g., Kuryłowicz, *Studies*, 136.

30 See above.

31 Cf. Ungnad-Matouš, *Grammatik*⁵, § §18e, 47c; von Soden, *GAG* §31f; e.g., *ḥa-aš-ši* '(in the) fifth place' (En. el. VII: 33).

32 Cf. von Soden, *GAG* § §19a, 30b. There is no independent basis for the claim of H. Hirsch ("Zum Altassyrischen," *Or.* 41 [1972], 402; "Akkadische Grammatik—Erörterungen und Fragen," *Or.* 44 [1975], 263) that this orthographic phenomenon indicates a phonological rule by which sibilant distinctions were neutralized when they closed a syllable. By the same token, one would have to assume that other homorganic consonants became neutralized in syllable-final position since the consonant in most *VC* signs can represent all members of a homorganic series.

33 See J. H. Greenberg, "The Patternings of Root Morphemes in Semitic," *Word* 6 (1950), 162–81; G. Herdan, "The Patterning of Verbal Roots Subjected to Combinatory Analysis," *Word* 18 (1962), 262–68; and Kuryłowicz, *Studies*, esp. 19.

34 Cf. Reiner, *LAA*, 41; Malone, *Systematic Metathesis*, 398–99, n. 12.

following homorganic consonant.³⁵ The dental/sibilant + sibilant assimilations in Akkadian should therefore be included as part of this larger picture.

- (1a) /t+š/ → [šš]; /pitšaš/ → [piššaš] 'spread!'³⁶
 (1b) /t+s/ → [ss]; /ḥitsas/ → [ḥissas] 'pay heed!'³⁷
 (1c) /t+s_x/ → [ss]; phonetic *qī-bī-su* = /qibīt+s_xu/ → [qibissu] 'his command'³⁸
 morph. *qī-bit-su* = /qibīt+s_xu/ → [qibissu]³⁹
 (2a) /dš/ → [šš]; /ediš+iš/ → [eššiš] 'anew'⁴⁰
 (2b) /ds/ does not occur
 (2c) /d+s_x/ → [ss]; phonetic *ū-um-mi-su* = /ummid+s_xu/ → [ummissu] 'I flanked it'⁴¹
 morph. *e-mid-su-nu-ti* = /ēmid+s_xunūti/ → [ēmissunūti] 'I imposed them'⁴²
 (3a) /tš/ does not occur⁴³
 (3b) /ts/ does not occur
 (3c) /t+s_x/ → [ss]; phonetic: I know of no examples
 morph. *la-ḳ-iṭ-su-nu* = /lāḳiṭ+s_xunu/ → [lāḳissunu] 'it controls them' (lit. 'their controller')⁴⁴
 (4a) /sš/ does not occur
 (4b) /ss/ → [ss]; /lamass+ka/ → [lamassaka] 'your protective genie'⁴⁵

35 This rule subsumes the following assimilations in Akkadian: /dt/ → [tt]; /dn/ → [nn]; /bm, pm/ → [mm]; /gk, qk/ → [kk]. This list would be much longer were it not that phonotactic constraints did not allow for the development or survival of sequences of homorganic consonants.

36 Written *pi-iš-ša-aš*, EA 356: 32. Perhaps the sporadic assimilation of /kš/ to šš, described in von Soden, GAG §28d, is an extension of the /tš/ assimilation, as phonetically /k/ is the velar counterpart of /t/. Note that young children frequently articulate [k] for /t/, as in [blk] for "bed," [hak] for "hot," etc.; for these and other examples, see G. Branigan, *Journal of Psycholinguistic Research* 5 (1976), 121; Hyman, *Phonology*, 17. Imperfect verse rhyme also frequently pairs /t/ with /k/; see A. M. Zwicky, in S. S. Mufwene, ed., *Papers from the Twelfth Regional Meeting*, Chicago Linguistic Society (Chicago, 1976), 686. There is also supportive evidence from Akkadian. In Neo-Babylonian the rule by which *r* becomes *š* preceding *t* extends to *k*, too; cf. Hirsch, *Akkadische Grammatik*, 296. In Neo-Assyrian and Neo-Babylonian the second person singular stative suffix is often represented as *k* rather than *t*. Gelb would view this as a case of morphological analogy with the first person, which has a *k* suffix, but a phonetic explanation would appear sounder; cf. Gelb, *Bi. Or.* 12 (1955), 108b. For initial /t/ interchanging with /k/ in the Old Assyrian month-name *Kalwartu* = *Tanwartu*, see von Soden, *OLZ* 70 (1975), 460. Gelb, op. cit., 95b, 103a, prefers to view the /kš/ assimilation as nothing more than a scribal whim.

37 Written *ḥi-is-sa-aš*, Gilg. XI: 22.

38 E.g., YOS IX, 35:17.

39 E.g., Borger, *Esarh.*, p. 106: 29.

40 E.g., *ibid.*, p. 9, no. 8: 7 *eš-šiš*.

41 *LIH* 57: 24.

42 Borger, *Esarh.*, p. 106: 25.

43 Except in an Aramaic loanword, *naṭāšu*; cf. Hirsch, *Akkadische Grammatik*, 293 with n. 181. A more recent collation, however, reads this word as an entirely different verb, thereby eliminating the exception; see W., von Soden, *Or.* 46 (1977), 191.

44 En. el. VII: 81. Despite the lack of a phonetic writing, the morphophonemic spelling with *su* rather than *šu* attests to the assimilation.

45 Kraus, *Abb.* I, 6:11.

- (4c) /s+s_x/→[ss]; *ip-pa-li-zu-nu-ti* = /inpalis+s_xunūti/→[ippalissunūti] ‘he gazed upon them favorably’⁴⁶
- (5a) /šš/ does not occur
- (5b) /ss/ does not occur
- (5c) /š+s_x/→[ss]; *ma-ru-ūs-si* = /maruš+s_xi/→[marussi] ‘it is distressful to her’⁴⁷
- (6a) /zš/ does not occur
- (6b) /zs/ does not occur
- (6c) /z+s_x/→[ss]; phonetic *i-ḥu-si* = /ṛḥuz+s_xi/→[ṛḥussi] ‘he married her’⁴⁸
morph.: Strictly speaking there is none. But in Neo-Babylonian there is a tendency to write consonants with a vowel following. Thus, note *šu-ḥi-zi-su* = /šūḥiz+s_xu/→[šūḥissu] ‘instruct him!’⁴⁹
- (7a) /šš/→[šš]; /aššatu/→[aššatu] ‘wife’
/mudešši/→[mudešši] ‘he makes abundant’⁵⁰
- (7b) /šs/→[ss]; /išsi/→[issi] ‘he summoned’⁵¹
- (7c) /š+s_x/→[ss]; phonetic *up-pi-is-si* = /uppiš+s_xi/→[uppissi] ‘treat her!’⁵²
morph. *e-pu-uš-su-um* = /ēpuš+s_xum/→[ēpussum] ‘I made for him’⁵³

Now if we assume for *s_x* an underlying phonemic value /š/, we are confronted with at least three cases in which there is a discrepancy between the results of combinations of dental/sibilant + *s_x* and dental/sibilant + *š*. Specifically, the assimilation in (1a) yields šš, while (1c) yields ss; the assimilation in (2a) yields šš, while (2c) yields ss; and (7a) remains šš, while the assimilation in (7c) yields ss.

On the other hand, if we assume for *s_x* and underlying value *s*, the morpheme boundary will condition no change other than that predicted by the general phonological rules for the assimilation of any dental or sibilant to a following *s*. That is, the assimilations in both (1b) and (1c) yield ss; both (4b) and (4c) yield ss; and both (7b) and (7c) yield ss. More importantly, we thereby capture a phonological generalization that holds true for every dental/sibilant + sibilant cluster in Akkadian: *Any dental or*

46 YOS IX, 35 :29.

47 Kraus, *AbB*. I, 28:9.

48 *LE* §27: 3.

49 Cited in *CAD* A¹, 180b. For the phenomenon, see von Soden, *GAG* §18d.

50 *CH* prolog 3: 33 *mu-de-eš-ši*.

51 Written *is/is-si*; e.g., Kraus, *AbB*. I, 27: 17; *LE* §25:26. That /š/ is underlying is clear from the present form *išassi* (e.g., Gilg. XI: 116) and the fact that */išsi/ undergoes the MB/MA rule according to which a sibilant becomes *l* preceding a sibilant other than *š* or a dental; cf., e.g., *il-si* (*EA* 356: 13), *al-si-ki* (Ebeling, *Handerhebung*, p. 134: 42). Note the morphophonemic writing *iš-zi* in Old Assyrian, cited in Hirsch, *Zum Altassyrischen*, 403. It is perhaps unexpected to find an Akkadian root with *š* and *s* in first and second radical positions, respectively. This coincides, however, with Greenberg's findings for Arabic. In those few cases in which two sibilants occur within a stem, in each case a *š* precedes some other sibilant; *Patterns*, 174.

52 Descent of Istar. 38.

53 *LIH* 57: 46.

sibilant (including š) assimilates to a following voiceless⁵⁴ sibilant. This rule appears to apply in the phonology of every Akkadian dialect.⁵⁵

Since there are no native speakers of Akkadian, we cannot ask them whether their intuitive sense accords with the conclusion that the underlying value of s_x is s . Nonetheless, scribal convention lends support to this hypothesis. In most dialects of Akkadian morphophonemic spellings of the form dental/sibilant + s_x are written using signs with initial s (or z),⁵⁶ not $š$. This is true of both syllabic and logographic writings. Compare the following examples: ÌR(*warad*)-zu 'his slave',⁵⁷ *šu-ba-at-zu-nu* 'their abode',⁵⁸ *be-lut-su* 'his lordship',⁵⁹ SUĦUŠ(*išid*)-su 'his foundation',⁶⁰ *nap-šat-su* 'his life',⁶¹ *lil-qut-su-nu-tú* 'let it take them away',⁶² *a-mat-si* 'her word'.⁶³

There are, to be sure, exceptional writings with $š$ for the pronominal suffix, but these can be explained as the result of a non-standard orthographic tradition. On their account, however, some Assyriologists have sometimes inferred that in some dialects pronominal $š$ remained [š] even when preceded by a dental or sibilant. Such writings are attested very infrequently in Old Babylonian,⁶⁴ and must be viewed as deviations from the standard convention. In Old Assyrian, however, the suffix is regularly written $š$ when preceded by $š$, as in *e-pá-šum* 'I shall make for him'.⁶⁵ Since in Old Akkadian the suffix was written s or z , the most likely explanation for the Old Assyrian practice is that pronominal */š/ was still articulated distinctly from /š/ or /s/ and that the assimilation

54 Excepted is /šz/, as in *ušzīz* 'he set up', which later becomes *ulztz*. The peculiar nature of /z/, in that it behaves like a dental here, jibes with the fact that in Semitic root patterning /z/ seems to behave like a dental; cf. Greenberg, *Patternings*, esp. 175.

55 Cf. Reiner, *New Cases of Morphophonemic Spellings*, 35.

56 As Goetze observed, the employment of z appears to originate in assimilations of dental (not sibilant) + pronominal s_x , distinguished especially in Old Akkadian (*The Sibilants of Old Babylonian*, 138) and in southern OB (ibid., 140f.; *The Sibilant in OB* *našārum*, 15f.). Goetze inferred phonetic distinctions from these orthographic differences. Perhaps in OAKk. dental + s_x were articulated as an affricate, [ts]. But in OB variant writings of s and z , such as in the same PN *Be-le-su-nu* (Kraus, *AbB*. I, 27:1) and *Be-le-zu-nu* (ibid. 28:1), seem to militate against a phonetic interpretation. Goetze's view has, for this and other reasons, found little acceptance; cf. also P. Swiggers, "A Note on the Phonology of Old Akkadian," *Orientalia Lovaniensia Periodica* 11 (1980), esp. 6, n. 5.

57 RTC no. 78: rev. 1; OAKk. Note that in OAKk. z represents /s(s)/. When not part of an assimilation process, the suffix is written *su*; e.g., GIŠ.TUKUL⁵¹-su = *kakktšu* 'his weapons' (Hirsch, *AfO* 20 [1963], p. 35: 53); see also the Appendix.

58 YOS IX, 35: 10; OB.

59 Hinke, *Kudurru*, I: 17.

60 Ibid., IV: 7.

61 En. el. IV: 18.

62 Pfeiffer, *State Letters of Assyria*, no. 45: rev. 7.

63 W. G. Lambert, *JAOS* 88 (1968) = *Essays in Memory of E. A. Speiser*, 127, IIb: 13, 20; LB.

64 Cf., e.g., von Soden, *GAG* § 30f, 84b; E. A. Speiser, "Comments on Recent Studies in Akkadian Grammar," *JAOS* 73 (1953), 132; H. Hirsch, *ZA* 58 (1967), 325; for examples and references, see K. R. Veenhof, *Aspects of Old Assyrian Trade and Its Terminology* (Leiden, 1972), 90, n. 142.

65 *BIN* 4, 9: 8. Cf. K. Hecker, *Grammatik der Kultepe-Texte, An. Or.* 44 (Rome, 1968), §41b; Veenhof, loc. cit.

of /š/ + /s/ yielded šš, written šš.⁶⁶ Note that the assimilation of dental or *s* + *s*_x was written in Old Assyrian as *s* or *z*.⁶⁷ In Middle Assyrian, the standard convention of employing *s* to render the suffix preceded by a dental/sibilant was adopted.⁶⁸ In Hurro-Akkadian versions of Akkadian the Old Assyrian practice of writing *s*_x as š when preceded by a dental or sibilant persisted. It represents an orthographic phenomenon alone, and not a phonetic reality. This conclusion is made virtually certain by comparing variant morphophonemic and phonetic spellings within the same dialect, for example, at Alalah, *li-iš-bat-šu* 'let him seize him'⁶⁹ and *šu-ub-bi-is-su-nu(-ma)* 'seize them'⁷⁰; and, at Boghazkoi, *ni-pá-aš-ši-iṭ-šu* 'we shall violate it'⁷¹ and *i-kà-aš-ša-az-zu* (= /ikaššad + *s*_xu/) 'he will reach him'.⁷² In late Akkadian dialects, especially Neo-Assyrian, we also find the occasional usage of š to render the pronominal suffix following a dental or sibilant; for example, *ar-ku-us-šu*⁷³ and *ar-ku-us-šu*(var. *šū*)-*ma*⁷⁴ 'I tied him up' in contrast to *ar-ku-su*⁷⁵; *im-ḥa-aš-šū-nu-ti* 'he struck them'⁷⁶; *bi-rit-šū-nu* 'between them'.⁷⁷ However, in Neo-Assyrian times the phonemes /š/ and /s/ had merged in favor of /s/ so that a spelling with š reflected /s/ in any case. Despite this, scribes still conserved the old orthographic convention of writing *s* for pronominal š following dentals and sibilants most of the time.

It might be claimed that the writing of pronominal š as *s* when preceded by a dental/sibilant is merely a scribal convention harking back to Old Akkadian, when *š and *s were written with the S-row of signs. This, however, does not account for the fact that in other positions pronominal */š/, written *s* in OAk., was written š subsequently. Moreover, had the phonological interpretation of pronominal š not been /s/ following dentals and sibilants, one would expect to find a breakdown of the convention in later times. Something analogous seems to have happened in late Old Babylonian when mimation was eliminated first from speech and gradually from most

66 For a similar conclusion by means of different reasoning, see Hecker, *Grammatik* §40h; cf. W. Mayer, *Untersuchungen zur Grammatik des Mittellassyrischen*, AOAT Sonderreihe 2 (Neukirchen-Vluyn, 1971), §17-1. In a recently published study, Swiggers (*A Note on the Phonology of Old Akkadian*, esp. 6) proposes that š was pronounced [š] and not [s] in all early Akkadian dialects. Among the faults I find in his argument is one particularly germane to our problem. Swiggers' theory does not explain why /š + *s*_x/ became *ss* and /šš/ elsewhere remained šš and did not become *ss*.

67 Cf. Hecker, *Grammatik* §41 a, c; cf., e.g., *uš-bi-a-su-nu* = /ušbiʔat + *s*_{unu}/ 'I had them stay overnight' (*BIN* 4, 1:13); *a-ta-ra-su-nu* = /aṭarrad + *s*_{unu}/ 'I shall send them on' (ibid.: 14); *ša-ba-zu(-ma)* = /šabat + *s*_u/ 'seize him!' (B. Kienast, *ATHE* no. 34: 19).

68 Cf. Mayer, *Untersuchungen* § §21-1, 2, 5.

69 Wiseman, *Alalah* no. 2: 27.

70 Ibid. no. 110: 7.

71 *Bo. St.* 8, 7, iv: 26.

72 Ibid., p. 96: 3. For additional examples and extensive discussion of scribal variations between *s* and š in Hurro-Akkadian, see E. L. Greenstein & D. Marcus, *JANES* 8 (1976), esp. 60-62. Contrast W. L. Moran, "The Syrian Scribe of the Jerusalem Amarna Letters," in H. Goedicke & J. J. M. Roberts, eds., *Unity & Diversity* (Baltimore, 1975), 163, n. 51.

73 Borger, *Esarh.*, p. 110b: rev. 2; cf. p. 54: 31 *ar-ku-us-šu-nu-ti*.

74 Streck, *Asb.*, p. 67: 12.

75 *OIP* 2, p. 88: 36 (Sennacherib).

76 Pfeiffer, *State Letters of Assyria* no. 24: rev. 3.

77 *TCS* V, p. 158: 3'; Late Babylonian.

writings.⁷⁸ In fact, cuneiform script tends to reveal—albeit belatedly at times—rather than conceal phonological change. In other words, the scribes in central dialects, who were native speakers of Akkadian, continued to write *s* for the pronominal suffix following a dental or sibilant because they understood the underlying morphophonemic value of the sibilant of the suffix to be *s* in such cases.

Interestingly enough, early Assyriologists described a change of *š* to *s* following a dental or sibilant. Consider the following statement: “After a dental or another sibilant *š* becomes *s*, with which the preceding sibilant, and sometimes the dental, assimilate.”⁷⁹ Unfortunately those scholars did not analyze this phenomenon as a regular phonological process so much as an orthographic practice. Nevertheless, this observation coincides remarkably with my own interpretation of the scribal convention.

I shall now set forth my explanation of the phonological basis by which the initial /*s*_x/ of the pronominal suffix becomes *s* following a dental or sibilant but remains *š* elsewhere.

One theoretical possibility is that underlying the *š*-suffix is an abstract phoneme, perhaps */*š*/, which is realized following a dental or sibilant as *s* and elsewhere as *š*.⁸⁰ An abstract phoneme is one which has morphophonemic reality but is somehow always changed by the phonological rules so that it never actually appears in the spoken language on the phonetic level. However, to establish an abstract phoneme in a convincing manner one must reveal that phoneme to be underlying in a variety of environments, not only one. For another Semitic language, Brame has laid down the criteria that an abstract phoneme must be able to be identified as to its exact phonological features, and, secondly, that it must be identified in all radical positions.⁸¹ These criteria cannot be met for establishing an abstract phoneme underlying pronominal *s*_x in Akkadian,⁸² and another solution should be sought.

It is not a general rule that dental/sibilant + *š* becomes *ss* (see cases 1a, 2a, 3a, 7a). Hence, we must posit for /*s*_x/ two morphophonemic alternants, /*s*/ when preceded by a dental or sibilant, and /*š*/ elsewhere. Reiner⁸³ and Gelb⁸⁴ also posit these morphophonemic alternants. But in addition they posit morphophonemic alternants for all stems that end in a dental or sibilant and to which /*s*_x/ may be suffixed, such as /*māt*/ ‘land’ alternating with /*mās*/ when followed by the /*s*_x/ suffix. This solution bypasses the operation of phonological rules, overloads the lexicon, and, as we shall now see, functions redundantly. Once /*s*_x/ is recognized to be /*s*/ following a dental or

78 See my *Phonological Studies in Akkadian*, chap. 5 (“When /*m*/ Becomes *w* in Akkadian”) for a phonological account of mimation drop.

79 S. A. B. Mercer, *Assyrian Grammar* (New York, 1921), 18; following F. Delitzsch, *Assyrische Grammatik*² (Berlin, 1906), §64; idem, *Assyrische Lesestücke*⁵ (Leipzig, 1912), vii; A. Ungnad, *Babylonisch-Assyrische Grammatik*² (Munich, 1926), §6ka.

80 Cf., to a point, Hirsch, *Akkadische Grammatik*, 292.

81 M. K. Brame, “On the Abstractness of Phonology: Maltese ‘,’” in idem, ed., *Contributions to Generative Phonology* (Austin, Texas, 1972), 22–61.

82 Cf. Reiner, *LAA*, 110.

83 Reiner, *LAA*, 56; *How We Read*, 14, n. 15; but see the apparently contradictory view in *ibid.*, 25, n. 31.

84 Gelb, *A Note on Morphophonemics*, 74.

sibilant, the general assimilation rule applies and yields correct phonetic derivations without exception.

It is now necessary to formalize the linguistic mechanism by which /s_x/ becomes /s/ following a dental or sibilant and /š/ elsewhere. There are two alternatives. One is to morphologize /s/ and /š/ as allomorphs and employ a rule of selection to choose /s/ for stems ending in a dental or sibilant and /š/ elsewhere.⁸⁵ The process would be analogous to the rules governing the selection of the feminine suffix, either /at/ or /t/, depending on the phonological shape of the stem.⁸⁶ In that case, however, there is a phonotactic constraint against producing overweight syllables, creating the need for alternate suffix forms. Here there is no phonotactic need to convert /š/ or /s_x/ into /s/. For this reason, I prefer a second alternative.

I derive /s/ from /š/ by means of a "minor rule," a rule that is listed in the lexicon.⁸⁷ A minor rule is one that applies only to specially designated lexical items. For example, English nouns such as *foot*, *man*, *mouse*, *sheep* and *ox* must be marked so that they do not undergo the regular pluralization rule but follow minor rules of their own. Returning to Akkadian, the most frequently occurring and least marked⁸⁸ form of the suffix has initial /š/. We therefore list the suffix in the lexicon under /š/ but add a minor rule to convert /š/ to /s/ morphophonemically when it is preceded by a dental or a sibilant. The minor rule is triggered only when the stem to which the suffix is to be attached ends in a dental or sibilant. Here is an illustration. To express 'his wife' in Akkadian one begins with the lexical stem /aššat/ 'wife'. Then one "finds" the pronominal suffix for 'his' in the lexicon. It is represented in the lexicon under /šu/, but under that item is a minor rule stipulating that following a stem ending in a dental or sibilant one selects the alternate form, /su/. Since /aššat/ ends in a dental, the minor rule applies. The suffix /su/ is attached to the base /aššat/. The resulting /aššat+su/ automatically undergoes the phonological rule of dental/sibilant + sibilant assimilation, producing the correct surface form *aššassu*.

This solution, entailing a minor rule mechanism, likewise obviates the problem of why it is that /š/ + pronominal /š/ becomes *ss* while /šš/ elsewhere does not change. The minor rule by which /š/ becomes /s/ prior to the application of the assimilation rule only affects pronominal /š/, just as the minor rule which pluralizes *foot* as *feet* applies only here.

Most minor rules appear to develop synchronically in order to accommodate what originated as a historical irregularity.⁸⁹ Such is also the case with the assimilation of a dental/sibilant with pronominal *š* in Akkadian. To return to the historical explanation that we sketched above, we assume that the initial phoneme of the third person pronouns

85 For the theoretical approach, see J. B. Hooper, *An Introduction to Natural Generative Phonology* (New York, 1976), 73–74, 111–38.

86 See my *Phonological Studies in Akkadian*, chap. 3 ("The Akkadian Feminine Suffixes /t/ and /at/"); an abridged version of this chapter was presented at the annual meeting of the American Oriental Society, 1977.

87 See, e.g., G. Lakoff, *Irregularity in Syntax* (New York, 1970), esp. 30–48; Harms, *Introduction to Phonological Theory*, 118–20; King, *Historical Linguistics*, 134–39.

88 See, e.g., S. A. Schane, *Generative Phonology* (Englewood Cliffs, N.J., 1973), 112.

89 Cf., e.g., King, *Historical Linguistics*, 138; Schane, *Generative Phonology*, 83, 110. This is not to say that irregularity can result only by dint of historical factors; cf. J. T. Jensen, *Language* 51 (1975), 744.

was originally */š/.⁹⁰ At some point during or after the Old Akkadian period, */š/ merged with /š/. In most positions */š/ could be analyzed by speakers as /š/. Thus, geminate *śś was interpreted as */š/ doubled, so that it could now be understood and articulated as /š/ doubled or šš.⁹¹ However, the assimilation of dental/sibilant + */š/ produced a sound that was not identical to šš and could not be analyzed as /š/ doubled or geminated. Since the sound was distinct from šš and may have resembled ss more than šš,⁹¹ and since Akkadian had a rule that assimilated a sequence of dental/sibilant + sibilant into the latter, *śś was reanalyzed as /D,S/ + /s/. This synchronic reanalysis led to an output that was satisfactorily similar to the original sound *śś and could be produced with the regular phonological assimilation rule. A minor rule was then induced to convert unmarked pronominal /š/ to /s/.⁹³

In this way, *via* a minor rule, native Akkadian speakers could preserve the unexceptionality of the general phonological rule, holding that a dental or sibilant assimilates to a following voiceless sibilant, and integrate the assimilation of a dental/sibilant to pronominal /š/ into the pattern of all dental/sibilant + sibilant assimilations. In fact, this analysis helps make further sense out of the diverse phenomena of Akkadian phonology by incorporating dental/sibilant + sibilant assimilations into the much broader domain of homorganic consonant assimilation. Homorganic consonant assimilation, in turn, seems to be a synchronic reflex of a historical—or prehistorical—constraint against the contiguity of homorganic consonants. The phonological rule eliminates what root patterning could not.⁹⁴

90 See the Appendix, too.

91 This is not very far from Goetze's explanation in *The Sibilants of Old Babylonian*, 149.

92 Contrast Speiser, *Comments on Recent Studies*, 132; Swiggers, *A Note on the Phonology of Old Akkadian*, esp. 6.

93 Cf. the reanalysis of /ss/ as š in Neo-Assyrian *našû; see S. Parpola, *Assur* 1/1 (1974), 1–10. For further discussion of reanalysis in Semitic phonology see my *Phonological Studies in Akkadian*, 11–12 with references in n. 42.

94 Cf. above with n. 35.

Appendix: Pronominal */š/ in Old Akkadian

It is assumed in the foregoing study that the initial phoneme of the third person pronoun was originally */š/. The fact is that in Old Akkadian script the orthography distinguishes */θ/ from */š/ but not */š/ from a reconstructed */š/.¹ Thus, for example, the initial phoneme of the relative pronoun can be reconstructed on the basis of Akkadian š, Ugaritic d, Phoenician-Hebrew z, Old Aramaic z, Aramaic d etc. as */θ/. This phoneme is distinguished by and large from the independent, demonstrative, and suffixed pronoun, as well as the etymologically equivalent causative prefix.² The relative is generally written šu,³ ša,⁴ or šī.⁵ This accords with the employment of ša to render */θ/ elsewhere, as in the word a-ša-ri-su = /ʔaθar+iš+šu/ 'to its place'.⁶ The independent and other pronouns are written usually as su,⁷ su,⁸ and sa.⁹

Hence, when one encounters assimilations of š to pronominal *š in Old Akkadian, one cannot discern whether šš or šš is intended. Consider, for example, ga-ti-iš-su = /qāt+iš+šu/ 'in his hand'¹⁰; e-ri-su-nu = /erēš+šunu/ 'their cultivating'¹¹; a-ki-iš-su-ni-si-im = /aqiš+šunīsim/ 'I gave them'.¹² Because of this writing convention, many scholars surmise that /š/ and /θ/ had merged into one phoneme in Old Akkadian.¹³ Such an

1 So established by Thureau-Dangin; see above, n. 16. For a convenient listing of the signs assumed to represent */š/ in OAkk., see Aro, *Die semitischen Zischlaute*, 326–27.

2 Cf., e.g., Goetze, *The Sibilant in OB naṣarum*, 17; idem, *JCS* 1 (1947), 79; contrast S. Langdon, "The Etymology of the Babylonian Relative Pronoun," *AJSL* 31 (1914–15), 271; I. M. Diakonoff, *The Semito-Hamitic Languages: An Essay in Classification* (Moscow, 1965), 76; I. J. Gelb, *MAD* 2, esp. 38.

3 E.g., T. Fish, *MCS* 4/1 (1954), no. 3: obv. 10; *HSS* X, no. 5: 4.

4 E.g., *YOS* I, 10: 28 (Naram-Sin); *BE* I/1, 1: 12; *ibid.* 2: 12 (Šar-kali-šarri).

5 E.g., Hirsch, *AFO* 20 (1963), Sargon b2, 6: 15.

6 *Ibid.*, p. 36: 31 (Sargon). For the reconstructed */θ/, cf. Ugaritic *atr*, Old Aramaic ʔšr, Aramaic ʔtr, Hebrew ʔšr, etc.

7 E.g., *HSS* X, no. 5: 25 (causative prefix); *YOS* I, 10: 11, 29; *BE* I/1, 1: 13.

8 E.g., Fish, *MCS* 4/1 (1954), no. 3: obv. 7, rev. 4; Goetze, *JAOS* 88 (1968) = *Essays in Memory of E. A. Speiser*, no. 1: 5; 2: 1, 4; 3: 2 (causative prefix).

9 *HSS* X, no. 5: 7; Goetze, *loc. cit.*, no. 2: 9; *YOS* I, 10: 18, 30; *BE* I/1, 1: 14; etc.

10 *PBS* V, 36: 2, iii: 15. Since the š of adverbial iš would assimilate to the following sibilant, it is unnecessary to read iš as iš_x (so Poebel, *PBS* IV/1, p. 213, n. 5). The same criticism pertains to Ravn, *The Substitution* (see n. 15 above), 320, on aqššinišim, cited below. Contrast Gelb (*Sequential Reconstruction*, 89), who vocalizes qātiššu. Cf. the name Takil-iliššu = /takil+il+iš+šu/ 'he trusts in his god'; so T. Jacobsen, *AFO* 12 (1937–39), 334, n. 4; for the name, cf. ʔli-iš-da-gal = /il+iš+takal/ 'trust in the god' (*HSS* X, no. 10: 7; cf. Meek's note there, xxi).

11 *HSS* X, no. 5: 18.

12 *MDP* 14, 78: 3.

13 Cf., e.g., Moscati, *Introduction to the Comparative Grammar of the Semitic Languages* §8.29; R. C. Steiner, *The Case for Fricative-Laterals in Proto-Semitic* (New Haven, 1977), 146, who restates the "conventional view" without necessarily endorsing it.

inference is unwarranted, however, as the two phonemes could be represented alike in the script and yet be distinguished in speech.¹⁴

It is primarily the fact that in later periods the assimilation of $\check{s}$ + pronominal s_x remains distinct from $\check{s}\check{s}$ that supports the assumption that the third person pronoun in Old Akkadian had / $\check{s}$ / as its initial phoneme.¹⁵ Indeed, unless we make such an assumption, it is difficult to fathom how the distinctive assimilation of $\check{s}$ + s_x could have come about.

14 Cf. $\check{s}$ and $\check{s}$ written alike but pronounced distinctly in Jerusalem Biblical Hebrew.

15 Cf. Speiser, *Comments on Recent Studies*, 132, who expresses his own skepticism, though.