

THE MORPHOLOGICAL DEVELOPMENT OF THE 3.M.SG. PRONOMINAL SUFFIX ON PLURAL NOUNS IN CLASSICAL HEBREW¹

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ABSTRACT

The 3.m.sg. pronominal suffix on plural nouns is realized in several allomorphs in Classical Hebrew: in early Hebrew inscriptions, the suffix appears as <-W> and perhaps as <-YH>; in Biblical Hebrew, it usually appears as <-YW> (sometimes emended from <-W> in instances Masoretic *qere* readings), and occasionally as <-YHW> in poetic texts. In this study we provide a unified and principled linguistic account of these textual data, tracing the various phonological developments of the third masculine singular genitive suffix on plural nouns, and relating these phonological developments to the phonetic causes underlying them. After analyzing the phonological realizations of the high vocoids **U* (/w/ and /u/) and **Y* (/y/ and /i/) and of **H* (found in the third-person pronominal morphemes), we identify three stages of development that produced the <-Y-> in Biblical Hebrew: (1) the linkage of the number-gender morpheme to a single slot in the skeletal tier (effectively yielding an early diphthong contraction **-al > ē*); (2) the deletion of **H* in selected environments defined by accent and the surrounding vowels; and (3) the phonetically-motivated insertion of the glide **y* in the hiatus environment [-e:w:].

¹ Although this study has been nearly a decade in the making, it would not have been completed without the assistance of several conversation partners, foremost among them REDACTED and REDACTED of REDACTED, both of whom have patiently offered guidance and insight. They cannot be blamed for any lingering deficiencies in the system produced here. The article was supported at various stages by research funding from both REDACTED and REDACTED. It was at the former institution that AUTHOR2 did much of the early bibliographic work as part of a research assistantship to AUTHOR1 (2008–2009); the latter institution has been exceptionally supportive of AUTHOR1's other projects, and work on this paper was completed in the margins between several other projects funded over the years 2011–2017 by REDACTED. An early version of the paper was presented in the REDACTED. AUTHOR3 was enlisted at REDACTED to explore prosodic data; she did so as part of a paper for the class REDACTED.

1. INTRODUCTION

The 3.m.sg. pronominal suffix on plural nouns is realized in several allomorphs in Classical Hebrew (comprising both epigraphic Hebrew [EH] and biblical Hebrew [BH]). The suffix appears as <-W> and perhaps as <-YH> in early Hebrew inscriptions (although evidence of the latter form is tenuous). In BH, the suffix may appear as <-W> as well, usually in instances where the *kethiv* is corrected by a Masoretic *qere*, but the far more common realization of the suffix is normally <-YW>. The form <-YHW> is also found in some poetic texts. Our intent in this paper is to provide a principled linguistic account of the textual data at our disposal concerning the phonological development of the third masculine singular genitive suffix on plural nouns.

Three significant principles guide our proposal. First, we understand linguistics as one of many theoretical disciplines interrelated with philology. The former is focused on discovering and articulating language universals, whereas the latter is particular, and works with specifics.² Philology is roughly described as *the project of understanding extant texts*.³ Although the biblical text undeniably contains a sedimented record of linguistic forms, we assume that these strata of linguistic deposition may be teased apart through textual, translational, and linguistic analysis. The study of both epigraphic and curated texts therefore becomes an essential component of this diachronic project. We consider our proposal to account for this sedimentation to the extent that these analyses are able to account adequately for the diachronically-expressed data with well-attested

² C. L. Miller and J. A. Naudé, “The Disciplinarity of Linguistics and Philology for the Study of Biblical Hebrew” (paper presented at the annual meeting of the South African Society for Near Eastern Studies, Stellenbosch, South Africa, 7 Sept., 2016).

³ See S. Pollock, “Future Philology? The Fate of a Soft Science in a Hard World,” *Critical Inquiry* 35 (2009): 931–961.

cognate phenomena from the field of linguistics. Second, we seek to provide an account that posits a uniform underlying morphemic structure of the 3.m.sg. possessive suffix. Comparative studies of the Semitic languages have conventionally established that this morpheme was **-hũ* (with a high, back vowel of single or geminate length; i.e., *anceps*).⁴ We therefore proceed from this reconstruction. Third, our account seeks to remain commensurate with theoretical approaches to phonology. We employ such concepts as featural and metrical analysis; because of the diachronic nature of the development, as represented in the epigraphic and biblical texts, historical linguistics also informs our analysis.

In the following account, we apply a combined featural and gestural analysis to the phonological indices involved in the development under study. Featural analysis is a common aspect of phonology, and as such requires no further justification. Our view is that featural analysis can be interfaced with a gestural analysis informed by the studies of Browman and Goldstein, among others.⁵ This gestural analysis understands gestures—and not features—as phonological primitives (i.e., the irreducible particles of language). Thus, it takes into account empirical data measuring the routines rendered possible and the constraints imposed by human physiology during speech production. This combined account, we argue, provides a satisfactory account of the historical development by positing that sound changes typically “begin life as modifications to low-level output rules and then over time penetrate deeper into the linguistic system. From the perspective

⁴ E.g., J. Blau, *Phonology and Morphology of Biblical Hebrew* (LSAWS 2; Winona Lake, Ind.: Eisenbrauns, 2010), pp. 171–172 §4.3.2.4.1.

⁵ C. P. Browman and L. Goldstein, “Towards an Articulatory Phonology,” *Phonology Yearbook* 3 (1986): 219–252; idem, “Articulatory Gestures as Phonological Units,” *Phonology* 6 (1989): 201–251; idem, “Competing Constraints on Intergestural Coordination and Self Organization of Phonological Structures,” *Bulletin de la Communication Parlée* 5 (2000): 25–34.

of Lexical Phonology, this process can be viewed as the progressive infiltration of lexical structure by phonological rules.”⁶

2. DATA

2.1. Epigraphic Exemplars

Epigraphic Hebrew has only one clear attestation of the 3.m.sg. suffix on a plural noun: namely, W’NŠW (‘and his men’) on an inscription from Lachish dated to the early 6th century BCE (*HI Lach* 3: Rev. 1–2).⁷ The same suffix appears attached to a preposition in the form ’LW (‘to him’) in the Mešad Ḥashavyahu ostrakon (*HI MHsh* 1:13). In both cases, the suffix appears unambiguously as <-W>.

Other instances of the suffix on a plural noun are possible but uncertain. The Gezer Calendar, which dates to about 900 B.C.E, does attest the same suffix in the form YRHW (‘his two months’), but linguistic and paleographic considerations exclude this occurrence from the corpus of definitively Hebrew epigraphs (see below). Likewise, some epigraphers restore [’ŠMTW] (‘his bones’) on the tomb inscription from Silwan (*HI Silw* 1:2; ca. 700 B.C.E). Although this inscription is certainly written in Hebrew, the reconstructive nature of this reading precludes it from inclusion. Reconstruction also prohibits the incorporation of an amulet from Ketef Hinnom, which dates to the 7th or 6th century B.C.E. Although some scholars read L’HBW (‘with those who love him’; *HI*

⁶ J. Harris, “Towards a Lexical Analysis of Sound Change in Progress,” *Journal of Linguistics* 25 (1989): 35–56, quoted in A. McMahon, P. Foulkes, and L. Tollfree, “Gestural Representation and Lexical Phonology,” *Phonology* 11 (1994): 277–316.

⁷ We use *HI* to indicate the corpus compiled in F. W. Dobbs-Allsopp, J. J. M. Roberts, C. L. Seow, and R. E. Whitaker, *Hebrew Inscriptions: Texts from the Biblical Period of the Monarchy with Concordance* (New Haven: Yale University Press, 2005).

KHin 1:5–6) based on Deut 7:9, the reading itself is unclear. All these potential instances would witness to the suffix's representation as <-W>.

Other instances might manifest the 3.m.sg. suffix on plural nouns as <-YW>. However, these occurrences are equally uncertain. A second amulet from Ketef Hinnom, roughly contemporary with the first, may attest the suffix as <-YW> in the form PNYW (*HI KHin* 2:9), yet the remains of the final grapheme could also be read as <-H>.⁸ Consequently, the suffix could equally be <-YH>. The same form, i.e., PN[YW], is often construed in the first amulet as well, but the final two characters must be reconstructed in this case (*HI KHin* 1:18). Moreover, an 8th-century B.C.E tomb inscription from Khirbet el-Qom has received disparate readings, one being WMSRYH ('and from his enemies'; *HI Qom* 3:3). Given the reconstructive nature of these readings, the 3.m.sg. suffix could have been instantiated on plural nouns in Epigraphic Hebrew as <-YW> or possibly <-YH>, but the respective dates of the objects are in dispute and the evidence is unclear.⁹

The closely related Phoenician dialects demonstrate similar historical developments that may inform our reconstructive efforts. For example, Byblian Phoenician epigraphy witnesses to <-W> as the 3.m.sg. suffix on plural nouns. This suffix appears in the form ŠNTW ('his years') three times in the 10th century B.C.E (KAI 4:5; 6:3; 7:5) and once again in the 5th–4th c. B.C.E (KAI 10:9). This latter text also contains YMW ('his days'). The Gezer Calendar (KAI 182:1), which we consider to be

⁸ Following Dobbs-Allsopp et al., *Hebrew Inscriptions*, p. 273.

⁹ With respect to the second Ketef Hinnom amulet, P. K. McCarter ("The Ketef Hinnom Amulets" [COS 2.83], p. 221 n. 2), calls this a "late orthographic feature," and suggests a date in the Hasmonean Period (following the paleographic observations of J. Renz, *Die althebräischen Inschriften*, part 1: *Text und Kommentar*; vol. 1 of J. Renz and W. Röllig, *Handbuch der althebräischen Epigraphik* [Darmstadt: Wissenschaftliche Buchgesellschaft, 1995], p. 450). Yet, A. Yardeni ("Remarks on the Priestly Blessing on Two Amulets from Jerusalem," *VT* 41 [1991]: 176–185) views the script as authentically dated to the 7th–6th c. B.C.E. (see below, section 5.4).

an example of Phoenician,¹⁰ seems to demonstrate the same basic historical developments as Byblian Phoenician. In Standard Phoenician, the 3.m.sg. suffix on plural nouns is realized as <-Y>: e.g., ‘BDY (‘his servants’; KAI 19:3).¹¹ The phonological development underlying this spelling is consistent with the phonological developments proposed here for Hebrew. However, because Phoenician used an orthographic system in which *matres lectionis* were not used, the graphic representations differed, despite the two language’s underlyingly identical phonological realization of the 3.m.sg. suffix. By contrast, Moabite reflects the suffix only as <-H>, as in YMH (likely /yāmēhū/; ‘his days’) and, perhaps, RŠH (/rāšēhū/; ‘its chiefs’¹²) in the Mesha stele (KAI 181:8, 20, respectively).

2.2. Biblical Exemplars

BH represents the 3.m.sg. suffix on plural nouns as <-YW>, although poetic texts also attest <-YHW> (e.g., *gibbōrêhû*, ‘his warriors’, Nah 2:4; *yādêhû*, ‘his hands’, Hab 3:10; *ênêhû*, ‘his eyes’, Job 24:23), which Cross and Freedman describe as “archaic.”¹³ The suffix containing only <-W>, which we saw in Epigraphic Hebrew, does appear in

¹⁰ See D. Pardee, “A Brief Case for Phoenician as the Language of the ‘Gezer Calendar,’” in *Linguistic Studies in Phoenician* (ed. R. Holmstedt and A. Schade; Winona Lake, Ind.: Eisenbrauns, 2013), pp. 226–246.

¹¹ See C. R. Krahmalkov, *A Phoenician-Punic Grammar* (HdO 54; Leiden: Brill, 2001), p. 53. Krahmalkov adds ḤYY (‘his life’; KAI 47:2), but KAI reads this word as W’ḤY.

¹² E.g., G. A. Cooke, *A Text-book of North-Semitic Inscriptions* (Oxford: Clarendon, 1903), p. 9 n. on line 8, p. 13 n. on line 22; S. Segert, “Die Sprache der moabitischen Königsinschrift,” *ArOr* 29 (1961): 212–215; cf., though, K. P. Jackson, “The Language of the Mesha’ Inscription,” in *Studies in the Mesha Inscription and Moab* (ed. A. Dearman; Archaeology and Biblical Studies 2; Atlanta: Scholars, 1989), p. 117.

¹³ Frank Moore Cross and David Noel Freedman, *Early Hebrew Orthography: A Study of the Epigraphic Evidence* (American Oriental Series 36; New Haven: American Oriental Society, 1952), p. 68 n. 21. See similarly D. A. Robertson, *Linguistic Evidence in Dating Early Hebrew Poetry* (SBLDS 3; Missoula, Mont.: Scholars Press, 1969), p. 111–112, although Robertson considers these forms “archaizing,” since the historical form had dropped out of the language by the time of the respective texts’ composition.

the consonantal structure of BH as well, but the text was usually emended to <-YW> through a Masoretic *qere*. This phenomenon throughout the Hebrew Bible, as when *ktiv* W'NŠW is marked so as to be read W'NŠYW (*wa ʾānāšāyw*) in 1 Sam 23:5.¹⁴ On rare occasions, the *qere* shifts from a consonantal orthography marking a plural noun (<-YW>) to a vocalized consonantal structure marking a singular (<-W>, pointed as -ō).¹⁵ Importantly, such correction is interpretation: the consonantal structure in these instances may indicate either singular or plural nouns when only the suffix <-W> is present. Furthermore, the epigraphic attestation of <-W> in the form 'NŠW ('and his men'; *HI Lach* 3: Rev. 1–2; see above) provides the necessary grounds for considering the 3.m.sg. suffix as originally plural in those cases where the Masoretic Text (MT) modifies the consonantal structure through a *ktiv-qere* emendation. But taking the Masoretic tradition seriously allows us to posit a vocal tradition pronouncing these instances of -ā(y)w even for some cases of graphic <-W>. If the Masoretic tradition of vocalization is to be followed in these cases, the consonantal text would have to be considered the frozen orthography of an earlier period.

The orthographic alternation between EH's standard <-W> and BH's usual <-YW> could suggest at least four different conclusions.

- (i) These data could provide evidence for different stages of a single, unilineal morphological development. That is, they should be read diachronically, but

¹⁴ For a list, see A. Sperber, *A Historical Grammar of Biblical Hebrew: A Presentation of problems with Suggestions to Their Solution* (Leiden: Brill, 1966), pp. 263–264; but cf. D. N. Freedman, A. D. Forbes and F. I. Andersen, *Studies in Hebrew and Aramaic Orthography* (Winona Lake, Ind.: Eisenbrauns, 1992), pp. 63–65, who discuss the variations in many of the lists of *ktiv-qere* emendations to these forms.

¹⁵ See, e.g., Ps 105:18, 28; Qoh 4:8; 1 Kgs 16:26; Prov 16:27; Dan 9:12. See further F. I. Andersen and A. D. Forbes, *Spelling in the Hebrew Bible* (BibOr 41; Rome: Biblical Institute Press, 1986), p. 62.

within the same course of phonological development.

- (ii) The orthographic representations may provide evidence for different dialects. In this scenario, individual morphological developments have resulted in variant phonemic realizations, and the distribution of spellings may be taken as roughly complementary, with <-W> signaling forms produced in one dialect and <-YW> indicating origin in the other.
- (iii) Third, the spellings might simply be analyzed as alternating graphic representations of the same phonemic representation. That is to say, we might consider the variant spellings to be the result of different scribal conventions, as in the difference between British *colour* and American *color*.
- (iv) Finally, the solution could entail a combination of one or more of the preceding explanations, with scribal revision constituting a complicating factor.

In all likelihood scribal revision was indeed involved, as suggested by the *kethiv-qere* emendations. But any scribal intervention could not have been simply motivated by an attempt to secure a uniform biblical text irrespective of the vocal tradition. We argue below that the large-scale levelling of <-YW> throughout the biblical text (and the infrequently preserved <-W> (read /-ô/), even in cases where the Masoretes had /-āw/ in their vowel tradition) was driven by phonological variation attendant to both historical (diachronic) and dialectical (synchronic) differences.

3. SURVEY OF EXPLANATIONS

Several different reconstructions have been proposed to account for the underlying phonological development. These reconstructions can be categorized roughly

into four groups: The first group postulates an early reduction contraction of the diphthong (**ay* > *ê*) followed by the deletion of **h*. For example, while discussing Lachish's W'NŠW, Cross and Freedman drew an analogy from the Gezer Calendar and posited that the 3.m.sg. suffix on both plural and dual nouns progressed from **ayhũ* to **êhũ* and finally to /-êw/.¹⁶ Although they proposed this development for northern, Israelite Hebrew, they did suggest a possible **-aw* pronunciation for southern, Judahite Hebrew.¹⁷ This would allow for a contrast in development, with the southern form changing from **ayhũ* to **-aw*.¹⁸ S. L. Gogel follows Cross and Freedman's proposal, maintaining a phonological distinction between the Israelite and Judahite phonology. She explains the biblical *kethiv* (i.e., <-YW>) as a product of Israelite pronunciation (i.e., /-êw/) and the Masoretic vocalization (i.e., with /ā/ < **a*) as a product of Judahite pronunciation (i.e., **-aw* > -ā[y]w).¹⁹ According to this line of thought, the two pronunciations were contemporaneous and largely due to dialect geography. Yet, this proposal does not adequately account for the graphic presence of <-Y-> in the longer orthography, since it assumes that the form without *yod* is the Judahite one.²⁰

The second set of solutions reserves the contraction of the diphthong until the end of the process, with various deletions occurring prior to the juxtaposition of **-aw* (/ **-au*).

¹⁶ F. M. Cross and D. N. Freedman, *Early Hebrew Orthography*, p. 47. See previously GKC §91*g-i* (first solution, of -êhũ). The same progression has been supported recently by H. Gzella, "Phoenician," in *Languages from the World of the Bible* (Berlin: de Gruyter, 2012), p. 61, but surprisingly not for Hebrew (see below).

¹⁷ GKC (§91*i*) recognizes the different developments of -êhũ and -āw, but does not attribute the distinction to dialectal causes.

¹⁸ F. M. Cross and D. N. Freedman, *Early Hebrew Orthography*, p. 54.

¹⁹ S. L. Gogel, *A Grammar of Epigraphic Hebrew* (SBL Resources for Biblical Study 23; Atlanta: Scholars Press, 1998), pp. 160–161 n. 189.

²⁰ See the critique in D. Pardee, review of F. I. Andersen and A. D. Forbes, *Spelling in the Hebrew Bible*, *CBQ* 50 (1988): 279–280.

Z. Zevit offers two proposals to explain this form.²¹ The first proposal does not concern us here because it was largely predicated on a lexical rereading.²² His second proposal, however, proffers a historical development: **-áyhū* > **-áyū* or **-áyō* and finally > **-áw*. Zevit bases this development on Biblical Hebrew's tendency to leave the diphthong **-ay-* uncontracted under stress.²³ The latter suggestion fails because it conflates two otherwise distinct phonological developments (“syncope or assimilation of *y* and compensatory lengthening of the vowel”²⁴) into a single unattested one.

In a third approach, W. R. Garr provides a substantially different hypothesis for the shape of the Hebrew morpheme, which he advances alongside data from other Northwest Semitic languages. He avers that **-ay-hū* became **-aw-hū* through regressive assimilation, which then yielded **-aw-wu*. This **-aw-wu* then lost its final vowel, shifting to **-aww*. With the loss of word-final gemination, the suffix became **-aw*, and, with

²¹ Z. Zevit, *Matres Lectionis in Ancient Hebrew Epigraphs* (ASOR Monograph Series 2; Cambridge, Mass.: ASOR, 1980), p. 29 no. 99.

²² Zevit (*Matres Lectionis*, p. 29) suggests first that the form 'NŠW of *HILach* 3: Rev. 1–2 can be read as the 3.m.sg. suffix /-ō/ on a singular collective noun, similar to Isaiah 24:6 (among others): *wə-niš'ar 'ēnōš miz'ar* (“and [only] a few people have been left”). Gogel (*Grammar of Epigraphic Hebrew*, p. 160 n. 189) rightly criticizes Zevit's first proposal through two observations: First, she points to the absence of any other attestation of 'N(W)Š (i.e., 'ēnōš) used as a collective noun alongside the absolute 'NŠM (i.e., 'ānāšīm). Second, she points to the attestation of 'YŠ (representing /'īš/) being used as the collective noun for 'men' in epigraphic Hebrew (i.e., *HI Arad* 40:8). Together, these arguments suggest that Zevit's first analysis is highly unlikely.

²³ Z. Zevit, *Matres Lectionis*, p. 29. See previously GKC §91g–i (second solution, of *-āw*); H. Bauer and P. Leander, *Historische Grammatik der hebräischen Sprache* (Halle: Niemeyer, 1922; repr., Hildesheim: Olms, 1991), p. 204 §17t', p. 225 §25l; D. N. Freedman, “The Massoretic Text and the Qumran Scrolls: A Study in Orthography,” *Textus* 2 (1962): 94; W. Schneider, *Grammatik des biblischen Hebräisch: Ein Lehrbuch* (2nd ed.; Munich: Claudius Verlag, 1974), p. 66 §17.2.3 n. 3; J. Blau, *A Grammar of Biblical Hebrew* (PLO N.S. 12; Wiesbaden: Harrassowitz, 1976), p. 24 §7.2.1.5.1, p. 26 §7.3.2.2. Subsequently, see E. A. Knauf, “War ‘Biblisch-Hebräisch’ eine Sprache?” *ZAH* 3 (1990): 14; see also Z. Zevit, “The Linguistic and Contextual Arguments in Support of a Hebrew 3 m.s. Suffix -Y,” *UF* 9 (1977): 315–328.

²⁴ Z. Zevit, *Matres Lectionis*, p. 29.

lengthening under stress, it ultimately yielded **-āw*.²⁵ The crucial difference between this solution and the previous ones is that Garr's explanation favors a complex process involving an initial regressive assimilation (**y > w*) and then a subsequent progressive assimilation (**h > w*) in lieu of the more streamlined early diphthong contraction preferred by Cross and Freedman and their congeners. Although possible, this progression remains unmotivated from a phonological standpoint and appears to be rather *ad hoc*.

In all three of the aforementioned solutions, the surface-level orthographic development betrays an underlyingly linguistic development. Adherents of the final, most extreme solution hold that the <-Y-> is a *purely graphic* indicator of plurality, unrelated to any underlying linguistic reality. For example, Cross maintained the historical dimension inherent to his and Freeman's earlier position in later work, but jettisoned the dialectal aspects. Instead, he derived the morph from an underlying **-aw* (on the basis of more distant cognate forms than normally employed), and traced the development "in Old Hebrew" as: **-awhū̃ > *-awhu > *-awh > *-aw*, "with *yod* as a morpheme marker."²⁶ Similarly, F. H. Cryer maintains that the <-Y-> is to be understood as an "artificial construction through and through" that was unrepresentative of the contemporary phonology.²⁷ Although Cryer attributes the graphic use of <-Y-> of the Hebrew 3.m.sg.

²⁵ W. R. Garr, *Dialect Geography of Syria-Palestine, 1000–586 B.C.E.* (Philadelphia: University of Pennsylvania Press, 1985), pp. 106–108.

²⁶ F. M. Cross, "Some Problems in Old Hebrew Orthography with Special Attention to the Third Person Masculine Singular Suffix on Plural Nouns [–âw]," in F. M. Cross, *Leaves from an Epigrapher's Notebook* (HSS 51; Winona Lake, Ind.: Eisenbrauns, 2003), p. 356.

²⁷ F. H. Cryer, "The Hebrew 3rd Masc. Sg. Suffix *-JW* on Dual and Plural Nouns," *SJOT* 6 (1992): 205–212, quote from p. 210. Among those providing similar interpretations are F. I. Andersen, "Orthography in Ancient Hebrew Inscriptions," *ANES* (1999), p. 21; and, to some extent, D. Pardee, review of *Spelling in the Hebrew Bible*, pp. 279–280. We address Cryer's proposal in greater detail in section 5.5.

suffix on plural nouns specifically to analogy with the m.pl. ending <-YM>, others have attributed the <-Y-> more broadly to an orthographic standardization in which “graphic analogy restored the etymological writing -Y- (for /-ē-/ < */-ay-/) for the 3masc. sg. plural suffix, since -W was by then used for the singular suffix /-ō/.”²⁸

In our opinion, no one has as yet offered a compelling account of the orthographic surfacing of *yod* in the suffix under review. In the following argument, we will demonstrate two important features of the 3.m.sg. suffix on plural nouns in Hebrew. First, our analysis is consistent with the arguments of those who recognize an *underlying phonological rationale* for the surface-level orthography. Second, we demonstrate that Hebrew’s historical development remains consistent with the orthographic representations of the other Canaanite languages. We believe our linguistic account satisfies requirements both of simplicity and of explanatory force. In this analysis we find reason to maintain that the apparent mismatch between the consonantal orthography and the Masoretic vocalization was, in fact, due to dialectal differences. In contrast to Cross and Freedman, however, we identify the consonantal orthography <-YW> as representing the Judahite contribution, whereas the vocalization $\bar{a}(y)w$ represents phonology developments deriving from northern, Israelian Hebrew.

²⁸ H. Gzella, “Ancient Hebrew,” *Languages from the World of the Bible* (Berlin: de Gruyter, 2012), p. 88; see earlier See earlier H. M. Orlinsky, “The Biblical Prepositions *táhaṭ*, *bēn*, *bā’ad*, and Pronouns *’nú* (or *’anū*), *zō’āh*,” *HUCA* 17 (1942–1943): 288–292; F. I. Andersen and A. D. Forbes, *Spelling in the Hebrew Bible*, pp. 62, 324–326; P. Joüon, *A Grammar of Biblical Hebrew* (1st ed.; SubBib 14/I; Rome: Pontifical Biblical Institute, 1996), pp. 286–287 §94d, esp. n. 2 (but cf. P. Joüon and T. Muraoka, *A Grammar of Biblical Hebrew* [rev. ed.; SubBib 27; Rome: Pontifical Biblical Institute, 2006], pp. 263, where they call the form “historical-etymological,” and p. 264 n. 6: “there is no doubting that /y/ as part of the pl.cst. morpheme /ay/ actually existed at one stage of the evolution of this complex”. Although the sentence from n. 6 has been only slightly re-written from the first edition’s locution, Joüon originally called the *yod* “purely graphic” [p. 286]).

4. PRELIMINARIES

4.1. The Feature-Geometric Model

Before proceeding, it is necessary both to situate ourselves in current theoretical paradigms relating to phonology and phonetics and to provide an accurate description of the phonemes involved from the standpoint of that theoretical paradigm. Fundamental to our discussion below is our operation at a level of representation addressing the interface between phonology and phonetics. The model of phonological features employed here is that derived from the theoretical paradigm of Feature Geometry. This paradigm developed in the wake of G. N. Clements's observation that certain sets of distinctive features pattern together, and that these patterns could be traced to certain physiological universals deriving from the structure of the human articulatory apparatus (i.e., the vocal tract). Although several variations showing diverse structural relationships have been proposed,²⁹ we employ here as our base system the model proposed by P. Avery and W. J. Idsardi and usefully modified by T. Purnell, and E. Raimy.³⁰ The advantage to using

²⁹ E.g., G. N. Clements, "The Geometry of Phonological Features," *Phonology Yearbook 2* (1985): 225–252; E. C. Sagey, "The Representation of Features and Relations in Non-Linear Phonology" (Ph.D. diss., MIT, Cambridge, Mass. 1986); J. J. McCarthy, "Feature Geometry and Dependency: A Review," *Phonetica* 45 (1988): 84–108; M. Kenstowicz, *Phonology in Generative Grammar* (Blackwell Textbooks in Linguistics; Cambridge, Mass.: Blackwell, 1994); G. N. Clements, and E. V. Hume, "The Internal Organization of Speech Sounds," in *Handbook of Phonological Theory* (ed. J. A. Goldsmith; Cambridge, Mass./London: Blackwell, 1995), pp. 245–306.

³⁰ P. Avery and W. J. Idsardi, "Laryngeal Dimensions, Completion and Enhancement," in *Distinctive Feature Theory* (ed. T. Alan Hall; Berlin: Mouton de Gruyter, 2001), pp. 41–70; and T. Purnell, and E. Raimy, "Distinctive Features, Levels of Representation, and Historical Phonology," in *The Oxford Handbook of Historical Phonology* (ed. Patrick Honeybone and Joseph Salmons; Oxford: Oxford University Press, 2016), pp. 525–526.

this system is that it most effectively accounts for the interface between the (underspecified) phonological level and the (fully specified) phonetic level.³¹

The system achieves explanatory comprehensiveness by linking certain *dimensions* (formerly *distinctive features*) at the phonological level with the physical *gestures* that serve to implement those cognitive nodes. Despite the representation of phonemes as largely underspecified (with most dimensions not specified), the human articulatory apparatus must be given specific instructions with respect to a great number of features in order to produce sounds. Thus, completion rules operate at the phonology-phonetic interface in order to fill out the gestural specifications.³²

Another advantage of this system is that it takes into account the fact that phonetic gestures are controlled by pairs of antagonistic muscle groups. It is *activation* of these muscle groups—irrespective of the precise gesture to be implemented—that constitutes

³¹ In large measure, we have opted to work at this level so as to avoid specific problems associated with theories of underspecification and contrast. Our decision carries with it the benefit of being more accessible to Semitists: operating at the level of the phonology-phonetic interface justifies the use of fuller sets of (phonetic) specifications rather than the largely abbreviated sets of specifications stored at the phonological level. For a summary of underspecification aimed at Semitists, see J. M. Hutton, “Reconsidering the Derivational Prefix of the Biblical Hebrew t-Stems through Feature Geometry,” *Brill’s Journal of Afroasiatic Languages and Literatures* 7 (2015): 30–69. See earlier, e.g., G. N. Clements, “Toward a Substantive Theory of Feature Specification,” in *Proceedings of the Northeast Linguistic Society* 18 (ed. J. Blevins and J. Carter; Amherst, Mass.: GLSA, 1987), pp. 79–93; D. Steriade, “Redundant Values,” in *Papers on the Parasession on Autosegmental and Metrical Phonology* (ed. A. Bosch, B. Need, and E. Schiller; Chicago: Chicago Linguistic Society, 1987), pp. 339–362; idem, “Underspecification and Markedness,” in *Handbook of Phonological Theory* (ed. J. A. Goldsmith; Cambridge, Mass./London: Blackwell, 1995), pp. 141–174; D. Archangeli, “Aspects of Underspecification Theory,” *Phonology* 5 (1988): 183–207; P. Avery, and K. Rice, “Segment Structure and Coronal Underspecification,” *Phonology* 6 (1989): 179–200; K. P. Mohanan, “On the Bases of Radical Underspecification,” *Natural Language & Linguistic Theory* 9 (1991): 285–325; A. Calabrese, “A Constraint-Based Theory of Phonological Markedness and Simplification Procedures,” *Linguistic Inquiry* 26 (1995): 373–463; E. Dresher, *The Contrastive Hierarchy in Phonology* (Cambridge Studies in Linguistics 121; Cambridge: Cambridge University Press, 2009).

³² P. Avery and W. J. Idsardi, “Laryngeal Dimensions,” pp. 46–47; see also T. Purnell and E. Raimy, “Distinctive Features,” pp. 526–527.

the phonological *dimension*.³³ Two significant theoretical principles proceed from this observation. First, it explains why certain gestural combinations are simply impossible: for example, the labial articulator cannot be simultaneously [round] (i.e., the distinct gesture that produces a [w] sound) and [drawn] (producing [β], the voiced bilabial fricative, as in Spanish post-vocalic *b*). The two features simply cannot co-occur, even though both are activated by the [Labial] dimension. Accordingly, the exact gestural manifestation is dependent on both language-universal and language-specific rules responding to environmental factors.³⁴ Second, this observation permits dimensional *inactivity* to be manifested as neutral: in short, any phoneme for which the [Labial] dimension is not specified is realized with neither [round] nor [drawn] feature. In contrast to earlier systems, therefore, the framework proposed by Avery and Idsardi thus allows us to operate with minimal systems of unary (rather than binary) specifications. Instead of specifying that a feature is, for example, [+round] or [−round], we need only stipulate [Labial] at the phonological level; articulatory completion rules would then fill in the specification [round] or [drawn] at the phonetic level of the gesture. The absence of any such phonological specification (marked as [∅ Labial] where it is necessary to indicate lack of specification) is manifested as a “neutral” or “plain” phone.³⁵

4.2. Featural and Positional Specifications of *I* and *U*

The task of this section will be to describe the dimensional (and, where appropriate, the gestural) specifications of the high vocoids, *I* and *U*. We use these sigla

³³ P. Avery and W. J. Idsardi, “Laryngeal Dimensions,” pp. 43–45.

³⁴ T. Purnell and E. Raimy, “Distinctive Features,” p. 527.

³⁵ T. Purnell and E. Raimy, “Distinctive Features,” p. 526.

to capture the significant phonological observation that the approximants *w* and *y* demonstrate significant featural overlap with their respectively corresponding high vowels *u* and *i*. (For convenience we use here the *y* siglum conventional in Semitics instead of the International Phonetic Alphabet's siglum *j*³⁶). In its various manifestations (*i* and *y*), the phoneme *I* is realized as [+high, –back, –round] in traditional phonological descriptions. Similarly, *u* and *w* derive from a segment *U*, whose phonetic expression displays the features [+high, +back, +round].³⁷ Traditional phonological approaches to these high vocoid segments essentially analyze the glides *y* and *w* as either *featural* or *positional* alternants with the high vowels *i* and *u*, respectively. Both analyses are worthy of brief discussion here, and our system attempts to combine the valid observations from each.

In the *featural* analysis, on the one hand, the phonetic expression of the segments *I* and *U* is viewed to be the result of the precise set of features assigned to phones. The phones *i* and *u* differ from their glide counterparts *y* and *w* by the specification of the phoneme's root features. That articulatory feature is manifested as [±consonantal] or [±vocalic].³⁸ In this analysis, the phones *i* and *u* are usually thought of as [–cons, +voc], whereas *y* and *w* are [+cons, +voc]. In the *positional* analysis, on the other hand, the

³⁶ In the International Phonetic Alphabet [IPA]'s technical apparatus, [y] actually indicates a front, high, rounded vowel (e.g., German *ü*).

³⁷ For the specification of the high vocoids as [+cons, +voc], see, e.g., J. D. Kaye and J. Lowenstamm, "De la syllabicité," in *Forme sonore du langage: Structure des représentations en phonologie* (ed. F. Dell, D. Hirst, and J.-R. Vergnaud; Paris: Hermann, 1984), pp. 123–159; although, cf. F. Dell and M. Elmedlaoui ("Syllabic Consonants and Syllabification in Imdlawn Tashlhiyt Berber," *Journal of African Languages and Linguistics* 7 [1985]: 106–107), who suggest *I* and *U* should be considered [–cons, +voc].

³⁸ For simplicity's sake, we use the binary features [±consonantal] and [±vocalic], which are entrenched in phonological theory. Some systems use other features, including [±syllabic] and [±sonorant]. The feature specification is determined by the system in use by each researcher. For the purposes of this article, the precise system is unimportant, so long as we recognize the general equivalence between [+syllabic] and [–consonantal] over against [–syllabic] and [+consonantal].

behavior of these high vocoids (*i* and *y*, *u* and *w*) is not the result of feature specifications, but is instead predictable from the phoneme's position within the syllable.³⁹

We attempt to offer a unified system of representation here, taking into account observations from both systems and streamlining the notation. Our consideration of *I* and *U* as unspecified for the feature [consonantal] licenses these phonemes to be recruited to fill either consonantal positions (C-slots) or vowel positions (V-slots) in the skeletal structures of words. Thus, when appearing at syllable margins, these phonemes are normally analyzed as the semi-vocalic glides *y* and *w* (and, accordingly, assigned a [+cons] specification at the phonetic level). Conversely, when appearing in syllable nuclei, they are realized as the vocalic segments *i* and *u* (assigned [–cons]). Notably, this generalization holds basically true in BH prosody, and comprises the fundamental picture alluded to by most BH grammars. This supposition is warranted because, as J. Padgett has observed, the ability of metrical analysis to predict the realization of the underlying segments as either vowels or semi-vocalic glides means that the use of a feature [consonantal] to distinguish between positional variants is a redundant system.⁴⁰ Accordingly, [consonantal] ceases to be a relevant featural representation of high vocoids at the level of the phoneme.

At the same time, there are reasons to view differences in featural specification as serving some role at the phonetic level. Most recent descriptions note subtle distinctions

³⁹ E.g., F. Dell and M. Elmedlaoui, “Syllabic Consonants”; idem, “Syllabic Consonants in Berber: Some New Evidence,” *Journal of African Languages and Linguistics* 10 (1988): 1–17; see also D. Steriade, “Glides and Vowels in Romanian,” *Proceedings of the Berkeley Linguistic Society* 10 (1984): 47–64.

⁴⁰ J. Padgett “Glides, Vowels, and Features,” *Lingua* 118 (2008): 1937–1955; and S. Rosenthal, *Vowel/glide Alternation in a Theory of Constraint Interaction* (New York: Garland, 1997), esp. pp. 4–12, 274–275.

in constriction of the vocal tract between the vocalic and semi-vocalic segments. This distinction is frequently described in terms of a feature [vocalic],⁴¹ and seems to introduce perceptual salience between the segments. I. Chitoran and A. Nevins suggest that “one can talk about the qualitative difference between the predominance of a transition in the case of glides, and the predominance of a steady-state in the case of vowels.”⁴² Also representative of this view is phonologist M. Kenstowicz, who acknowledges that the relationships between the high vocoid segments is one of “close kin.” But Kenstowicz goes on to state, “If one articulates an [i] and then slowly constricts the tongue body, the pronunciation shades into the *jod* [y]. [u] shades into [w] under similar constriction. Intuitively, [y] and [w] are consonantal variants of the vowels [i] and [u].”⁴³

⁴¹ For contrastive distinctions in constriction, see, e.g., I. Chitoran and A. Nevins, “Introduction,” *Lingua* 118 (2008): 1901; J. Padgett “Glides, Vowels, and Features”; A. Nevins and I. Chitoran, “Phonological Representations and the Variable Patterning of Glides,” *Lingua* 118 (2008): 1979–1997; although cf. I. Chitoran, “Inter-Gestural Timing between Vocalic Gestures as a Function of Syllable Position: Acoustic Evidence from Romanian.” Pp. 25–30 in *Proceedings of the 6th International Seminar on Speech Production, Sydney, December 7–10, 2003* (Sydney: Macquarie University, 2003), pp. 25–30, where phonetic data are ambiguous in this regard.

⁴² I. Chitoran, and A. Nevins, “Introduction,” p. 1901; but contrast S. V. Levi (“Phonemic vs. Derived Glides,” *Lingua* 118 [2008]: 1956–1978), who challenges this analysis based on a variety of linguistic data. While some systems perceive only allophonic variation among these segments (e.g., R. Jakobson, C. G. M. Fant, and M. Halle, *Preliminaries to Speech Analysis* [Technical Report 13; Acoustics Laboratory, Massachusetts Institute of Technology: Cambridge, Mass., 1952; repr., MIT Press, Cambridge, Mass., 1963]), the more widely accepted view allows that articulatory differences manifest underlying phonemic differences (e.g., P. Ladefoged and I. Maddieson *The Sounds of the World’s Languages* [Oxford: Blackwell, 1996], pp. 322–326).

⁴³ M. Kenstowicz, *Phonology in Generative Grammar*, p. 23; similarly, see P. Ladefoged, *A Course in Phonetics* (3rd ed.; Fort Worth: Hartcourt Brace College Publications, 1993), p. 229. See also I. Maddieson and K. Emmorey, “Relationship between Semivowels and Vowels: Cross-Linguistic Investigations of Acoustic Difference and Coarticulation,” *Phonetica* 42 (1985): 163–174; cf. I. Maddieson, “Glides and Gemination,” *Lingua* 118 (2008): 1926–1936. Kenstowicz also uses the siglum [y] here to indicate the same phone signified by IPA [j].

This characterization of featural distinction at the phonetic level is consistent with recent analyses of the relationship between the glides (or semi-vowels) and the high vowels, but does not necessarily exclude the positional analysis. We therefore conclude that allophonic constriction degree is both motivated by and further constitutive of syllabification.⁴⁴ Our description below holds that: (a) the approximants are underlyingly identical to their associated vowels in a featural analysis; (b) the allophonic realization of each segment, especially constriction degree at the phonetic level, is predictable on the basis of metrical environment (including syllabification); and (c) these allophonic realizations produce acoustic percepts that further enhance the metrical divisions involving syllable boundaries. We are thus able to hold a fundamentally *positional* analysis at the level of phonology while allowing for the operation of certain featural specifications at the phonetic level.

4.2.1. The Phoneme *U ([u] and [w])

We posit an underlyingly unified segment *U*, which was realized in Biblical Hebrew as both [u] and [w]. The featural specifications of *U* are: [back, high]; the co-occurrence of [back] and [high] likely occasions the phonetic realization of the phone as [round] as well, although this feature would not be considered properly contrastive in phonological theories of underspecification.⁴⁵ As noted above, our theory accounts for slight variation in phonetic realization between the allophones [u] and [w] as an instance

⁴⁴ Cf. J. Padgett (“Glides, Vowels, and Features,” pp. 1944–1947) and A. Nevins and I. Chitoran (“Phonological Representations,” p. 1987), who assert that constriction degree is itself the dimension on which syllabification is based. In this theory, the correlation runs from the phonemic to the metrical.

⁴⁵ This corresponds to [+round, +back, +high, –low] in most previous feature systems.

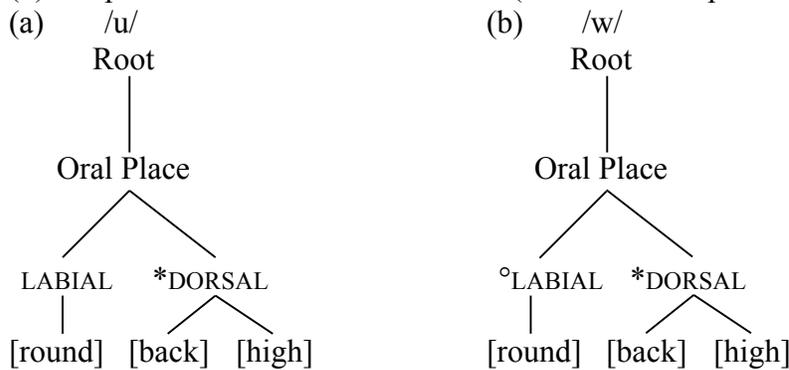
of perceptual salience. This introduction of perceptual salience is best brought to expression in the graphic representation initially provided by general Articulator Theory and subsequently described by Avery and Idsardi.⁴⁶ Articulator Theory posits that every phoneme was assigned a *designated articulator*—that is, the specific articulator with which the primary constriction of the airflow was effected. Avery and Idsardi call this the phoneme’s *head*.⁴⁷ In this representation, the single difference between [u] and [w] is the designation of [w]’s designated articulator as both [labial] and [dorsal], whereas [u]’s designated articulator is limited to [dorsal].⁴⁸ This distinction is not encoded at the phonological level, but rather resides at the phonetic level where it is a result of the prosodic environment.

⁴⁶ The notational convention applied here differs from those employed by E. C. Sagey, “Representation of Features”; M. Halle, “Phonological Features,” in *International Encyclopedia of Linguistics*, vol. 3 (ed. W. Bright; Oxford: Oxford University Press, 1992), pp. 207–212; idem, “Feature Geometry and Feature Spreading,” *Linguistic Inquiry* 26 (1995): 1–46; M. Halle, B. Vaux, and A. Wolfe, “On Feature Spreading and the Representation of Place of Articulation,” *Linguistic Inquiry* 31 (2000): 387–444; G. N. Clements and E. V. Hume, “Internal Organization.” Nonetheless, it remains fundamentally consistent with the basic presuppositions of all of them that segments have at least one “designated articulator” (in Halle’s terms); see A. Nevins and I. Chitoran, “Phonological Representations,” p. 1982.

⁴⁷ P. Avery and W. J. Idsardi, “Laryngeal Dimensions,” pp. 48–49.

⁴⁸ In this schema, we follow the model laid out by A. Nevins and I. Chitoran, “Phonological Representations,” based on, e.g., B. Gick, “A Gesture-Based Account of Intrusive Consonants in English,” *Phonology* 16 (1999): 29–54; and idem, “Articulatory Correlates of Ambisyllabicity in English Glides and Liquids,” in *Phonetic Interpretation: Papers in Laboratory Phonology IV* (ed. J. Local, R. Ogden, R. Temple; Cambridge: Cambridge University Press, 2003), pp. 222–236.

(1) Simplified Feature-trees of *u* and *w* (bottom row expressed in gestures):⁴⁹



In representation (1), the asterisk marks the designated articulator—that is, the physiological body that forms the primary constriction during the production of the phone. In (1b), however, we have adapted Levi’s notation, marking the LABIAL node with a raised circle (°) instead of an asterisk, to mark the fact that the labial constriction does not introduce phonemic difference, but rather phonetic difference. This slight distinction in notation captures Kenstowicz’s description above that “[u] shades into [w] under ... constriction”—specifically, under slight labial constriction.

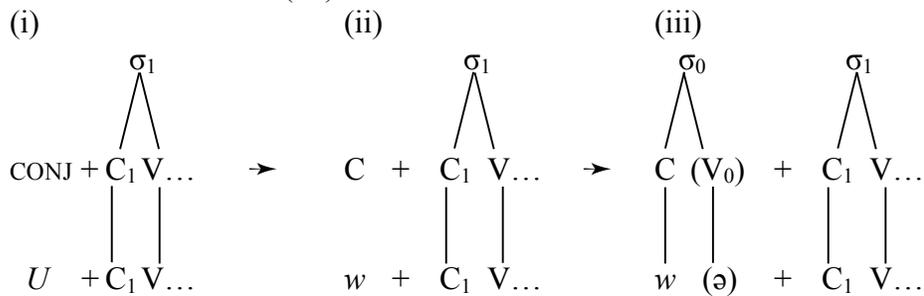
Excursus: The Conjunction in Biblical Hebrew

The underlying featural identity of *u* and *w* explains several phenomena in Biblical Hebrew, the most familiar being the alternation between the variant forms of the conjunction. As is well-known, the Biblical Hebrew conjunction is normally realized as: (a) *wə*- before non-labial consonants followed by full vowels; or (b) *û*- before the labial consonants /b, m, p/, or consonants followed by a murmured vowel (ə). This so-called “BuMP-shewa” rule can be accounted for by positing an underlying morpheme **U* that was analyzed as a syllable onset /w/ necessitating anaptyxis of the neutral vowel /ə/ in

⁴⁹ Adapted from S. V. Levi, “Phonemic vs. Derived Glides,” p. 1959.

cases of type (a), where the following C_1 is a non-labial consonant. (2a) captures this phenomenon. In (2a.i), the conjunction (consisting of the mono-phonemic morpheme U) was added to a word beginning with a non-labial consonant (which is itself the onset of syllable σ_1). As a result, the conjunction is realized phonemically as the glide w in the intermediate stage (2a.ii). Subsequently, the segment w was parsed as belonging to a new syllable, σ_0 . Hebrew syllables were required to contain a vocalic nucleus. Because the w had already been parsed as C in (2a.ii), σ_0 was necessarily supplied with a vocalic nucleus V_0 . This anaptyctic vowel slot was filled with *shewa*, as in stage (2a.iii). Conversely, (2b) captures the scenario in which the conjunction U was prefixed to a word beginning with a labial consonant, C_2 (2b.i). In this environment the phoneme U was analyzed as a V (2b.ii), which filled the nucleus slot of a syllable σ_0 . Normally, Hebrew did not permit onsetless syllables, but in this case it made an exception. (This is the only scenario in which Hebrew demonstrates the existence of onsetless syllables at the lexical level).

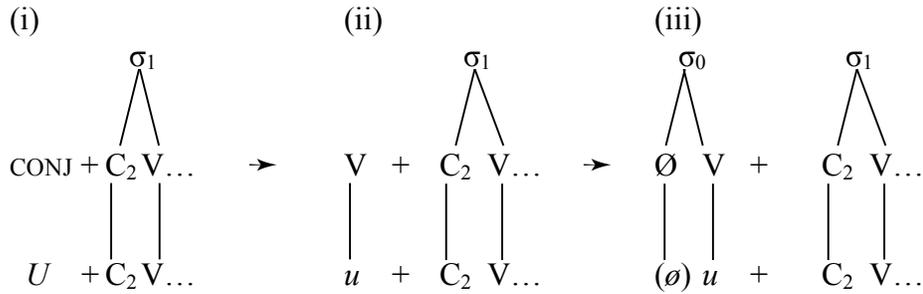
(2a) Phonological development of the Hebrew conjunction ($*U$) on words beginning with a Non-Labial Consonant (C_1).



Example:



(2b) Phonological development of the Hebrew conjunction (**U*) on words beginning with a Labial Consonant (C_2).



Example:

**U* + *malk* \rightarrow *u* + *malk* \rightarrow *û* + *mélek*

The relative simplicity of this explanation helps to confirm the underlying featural identity between *u* and *w*.

4.2.2. The Phoneme **I* ([i] and [y])

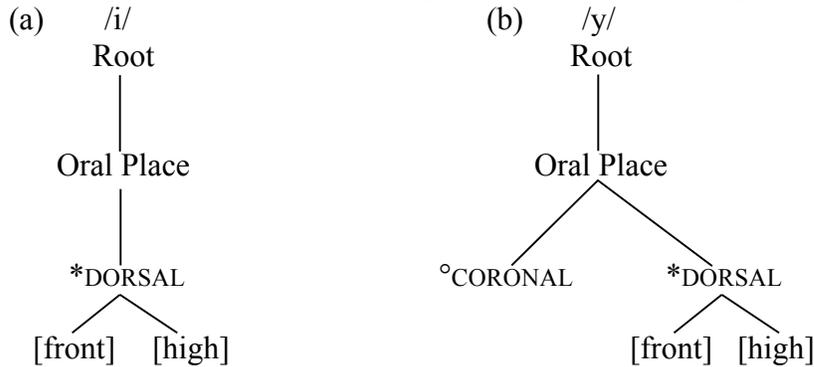
A similar proposal for the featural similarity underlying the phones [i] and [y] informs our analysis. As with the unified segment *U* discussed above, we posit a similarly unified segment **I* underlying the phones [i] and [y]. Although interpretations of the featural representation of [y] have been inconclusive, we find compelling the x-ray analysis performed by P. Keating.⁵⁰ Keating’s model recognizes both [i] and [y] as articulated with the dorsum (i.e., the tongue body), and possessing the features [high, front].⁵¹ Like the alternation between [u] and [w], in which the addition of a second designated articulator crucially differentiated the two positional alternants at the phonetic

⁵⁰ P. A. Keating, “Palatals as Complex Segments: X-ray Evidence,” *UCLA Working Papers in Phonetics* 69 (1988): 77–91. Keating’s model was picked up by A. Nevins and I. Chitoran, “Phonological Representations.”

⁵¹ We have adapted here Keating’s specifications [+high, –low, –back].

level, the acoustic difference between *i* and *y* is enhanced by the addition of the coronal articulator in [y]:

(3) Simplified Feature-trees of [i] and [y] (bottom row expressed in gestures):⁵²



On this account, [y], like other palatals, is a complex segment exhibiting double articulation. Keating’s and Nevins and Chitoran’s respective descriptions are consistent both with the variety of earlier (and subsequent) phonological theories—some of which consider the phoneme coronal, others dorsal⁵³—and with the *constriction*-based account of glide/vowel alternation. As in (1b), we have adapted the prevailing analysis’s notation, marking the (typically consonantal) CORONAL node with a raised circle (°) instead of an asterisk, to mark the fact that the coronal constriction does not introduce phonemic difference, but instead phonetic difference.

⁵² Adapted from A. Nevins and I. Chitoran, “Phonological Representations.” We leave the specific gestures of the CORONAL node undiagnosed, partly in response to T. Purnell and E. Raimy’s system (“Distinctive Features,” p. 526), where CORONAL does not seem to dominate the relevant gestures. If constriction degree does, in fact, vary slightly between [i] and [y], then their system would have to accommodate the phonetic distinctions between the phones in a graded application of the dimension [Tongue Height]. In short, our use of CORONAL here is heuristic, and can in theory be replaced with whatever specification distinguishes [i] from [y].

⁵³ See literature cited in P. A. Keating, “Palatals as Complex Segments.”

4.3. The Morphologically Constrained Phonemic Change $*s^1 > H > h$

One final phoneme must be discussed here before proceeding to our proposal: the phoneme found in the 3.m.sg. suffix throughout Semitic. It is widely recognized that the phoneme manifesting as /h/ in the Biblical Hebrew third-person suffixes (3.m.sg. *-hû* < $*-hũ$; 3.f.sg. *-hā/-āh* < $*-hǎ$; 3.m.pl. *-hem* < $*-hum[ũ]$; 3.f.pl. *-hen* < $*-hin[na]$)⁵⁴ originated as $*s^1$.⁵⁵ (for the underlying morphs, compare Akk. *-šu*; *-ša*; *-šunu*; *-šina*).⁵⁶ This phoneme was apparently pronounced [s] (compare Arabic and Ethiopic, where the phoneme $*s^1$ remains realized as [s]⁵⁷). For the most part, those studies in Semitic that discuss this change do so superficially. Usually, they note only two aspects of the historical sound change $*s^1 > h$ in several of the West Semitic dialects: (1) the limitation of the change to certain morphological environments, namely, the third-person pronominal suffixes and independent pronouns and the derivational prefix of the causative verbal stem(s) (Heb. *hiqtīl*; cf. Akk. *šuprusum*); and (2) the frequent occurrence

⁵⁴ For general surveys of the suffixes, see, e.g., R. Hasselbach, “Final Vowels of Pronominal Suffixes and Independent Personal Pronouns in Semitic,” *JSS* 49 (2004): 1–20.

⁵⁵ We use the siglum s^1 here, as in especially studies of the South Semitic languages because of the confusion likely occasioned by use of *š*. The latter consonant is typically associated with the phone [ʃ] (*sh* as in ‘ship’) because of its later pronunciation in Hebrew.

⁵⁶ See W. von Soden, *Grundriss der akkadischen Grammatik* (rev. ed.; AnOr 47; Rome: Pontifical Biblical Institute, 1969), p. 43 §42g. For Ugaritic, D. Sivan [*A Grammar of the Ugaritic Language* (HdO 28; Leiden: Brill, 2001), p. 51] and J. Tropper (*Ugaritische Grammatik* [AOAT 273; Münster: Ugarit-Verlag, 2000], p. 214 §41.21) place anceps vowels on both 3.m.sg. and 3.f.sg. forms. For the vocalization of the 3.m.sg. with an anceps vowel but the 3.f.sg. without, see J. Huehnergard, *An Introduction to Ugaritic* (Peabody, Mass.: Hendrickson, 2012), p. 33; Huehnergard also posits *-hin(ā)* or *hin(na)* in the 3.f.pl. In contrast, P. Bordreuil and D. Pardee (*A Manual of Ugaritic* [LSAWS 3; Winona Lake, Ind.: Eisenbrauns, 2009], p. 40) posit $*-hu$, while leaving the other forms unvocalized.

⁵⁷ See A. Faber, “Semitic Sibilants in an Afro-Asiatic Context,” *JSS* 29 (1984): 190 n. 1; idem, “Akkadian Evidence for Proto-Semitic Affricates,” *JCS* 37 (1985): 104–105; idem, “Second Harvest: *šibbōleθ* Revisited (Yet Again),” *JSS* 37 (1992): 8–9; see also J. M. Hutton, “Ugaritic $*s^1$ and the Roots *šbm* and *šm[d]* in KTU 1.3.III.40,” *Maarav* 13 (2006): 75–83 (for Ugaritic); and idem, “Reconsidering the Derivational Prefix” (for Hebrew).

of the same sound change in other languages, as in Proto-Indo-European **sVpt-* (e.g., Sanskrit *saptá*; Latin *septem*) > Greek **ἐπτά*.⁵⁸

Indeed, the realization of the Semitic phoneme **s¹* (= [s]) is typically *h* in the two morpheme-specific environments in Hebrew mentioned above. However, positing a sound-change directly from **s¹* > *h* may collapse two steps that must be posited using more up-to-date theoretical analyses of phonology in the field of linguistics. Using the theory of Purnell and Raimy (2016), we may identify the featural specifications of the phonemes **s¹* and *h* more precisely. Both phonemes are continuants, meaning that neither is specified with the feature [stop], but the way the continuous airflow of each segment is registered in the representation differs.⁵⁹ Both have an articulator LARYNX that participates in the production of each sound, by virtue of allowing airflow. However, whereas the glottal fricative *h*'s designated articulator is the LARYNX, the designated articulator of *s¹* is specified as CORONAL. We posit further that *h* is specified for the dimension [Glottal Width] (abbreviated below as [GW]). This is the dimension that controls the gestures [spread glottis], when phased with a continuant (as in *h*), and [constricted glottis], when phased with a stop (“Kingston’s Law”).⁶⁰ In contrast, the

⁵⁸ M. M. Bravmann, “The Semitic Causative Prefix *Š/SA*,” *Le Muséon* 82 (1969): 517–522; A. Faber, “Phonetic Reconstruction,” *Glossa* 15 (1981): 254–255; more generally R. Lass, *Phonology* (Cambridge Textbooks in Linguistics; Cambridge: Cambridge University Press, 1984, pp. 179–182 (“de-oralization”); H. H. Hock, *Principles of Historical Linguistics* (2nd ed.; Berlin: Mouton de Gruyter, 1991), pp. 130–131; and L. Campbell, *Historical Linguistics: An Introduction* (2nd ed.; Cambridge, Mass.: MIT Press, 2004), pp. 153–154.

⁵⁹ Cf. G. K. Iverson (“On the Category Supralaryngeal,” *Phonology* 6 [1989]: 285–304), whose system of representation would specify [+cont] for both phonemes, attached directly to the root node.

⁶⁰ See P. Avery and W. J. Idsardi, “Laryngeal Dimensions,” pp. 47–48. In the following, we use [spread] and [constrict] as shorthand for these two gestures.

phoneme /s¹/ receives its [fricative] gesture subordinate to its Oral Place node (since the stricture forming [s] occurs in the oral cavity rather than in the larynx).⁶¹

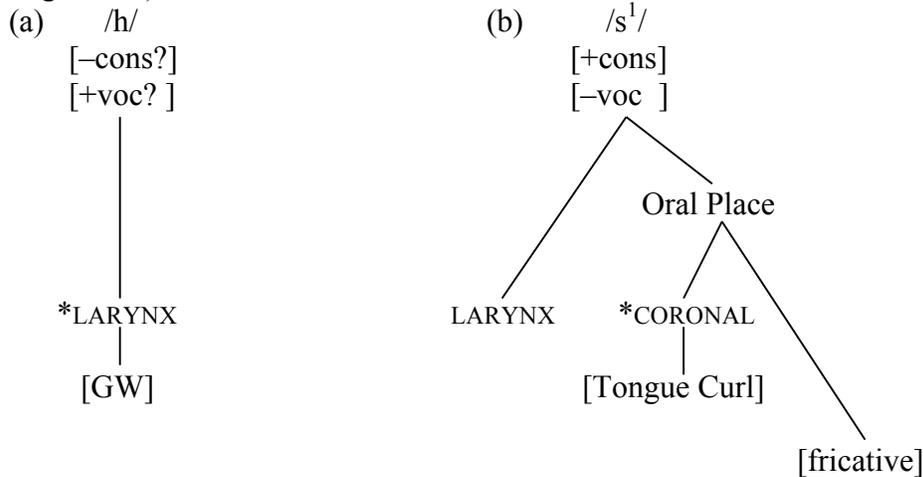
Insofar as it was not a stop or delayed release consonant (as were *taw* /t/, *daleth* /d/, and *samekh* /s/⁶²), the specification [fricative] of /s¹/ separates it from these phonemes. Further, the lack of specification for [concave] (= [lateral] in most studies) differentiated /s¹/ (= [s]) from the laterals *sin* /s/ (= [l]) and its emphatic counterpart /ṣ/ [l²] (cf. Arab. *ḍ*, Ug. *ṣ*, Aram. *q* > ʿ, Heb. *ṣ*). At the phonetic level, /s¹/ was articulated with the Coronal gestures [down] (= [anterior] in previous systems), which effects the alveopalatal position of the tongue tip, and [convex] (= [distributed]), which defines the tongue body's proximity to the roof of the mouth. These specifications at the phonetic level, however, are most likely feature-filling rather than specified in the phonemic representation.

The respective feature trees of *h* and *s*¹ are presented in (4):

⁶¹ The designation of the articulator CORONAL tends cross-linguistically to be a default feature-filling rule to phonemes that are unspecified for Oral Place. Therefore, it may be sufficient simply to assume that the phoneme /s¹/ (= [s]) was specified only as [fricative] alongside its root features [+cons, –son]. Default feature-filling rules can account for the additional specifications: [–son] typically occasions the specification CORONAL, which then acquires the specification [anterior] (= [down] in our terminology used here; see, e.g., J. M. Hutton, “Reconsidering the Derivational Prefix,” pp. 47–48). We use the slightly fuller system of specification here, however, for clarity.

⁶² See J. M. Hutton, “Reconsidering the Derivational Prefix,” pp. 36, 56–59.

(4) Feature-trees of h and s^1 (second-to-bottom row expressed in dimensions, bottom row in gestures):⁶³



The difference in specification of the articulator LARYNX between s^1 and h is crucial for our argument. The process of debuccalization is widely attested in the world’s languages,⁶⁴ and is most reasonably correlated with pressures moving toward ease of articulation.⁶⁵ In this process, $*s^1$ loses its oral place node, producing a phoneme that approximates h , but does not contain h ’s particular specification [GW].⁶⁶

⁶³ Adapted from M. Kenstowicz, *Phonology in Generative Grammar*, pp. 148, 150.

⁶⁴ E.g., R. Lass, *English Phonology and Phonological Theory: Synchronic and Diachronic Studies* (Cambridge Studies in Linguistics 17; Cambridge: Cambridge University Press, 1976), pp. 145–167; J. Durand, “On the Phonological Status of Glides: The Evidence from Malay,” in *Explorations in Dependency Phonology* (Publications in Language Sciences 26; ed. J. Anderson and J. Durand; Dordrecht: Foris, 1987) pp. 79–108.

⁶⁵ J. O’Brien, “An Experimental Approach to Debuccalization and Supplementary Gestures” (Ph.D. dissertation: University of California, Santa Cruz, 2012), p. 3, citing H. H. Hock, *Principles of Historical Linguistics* (2nd ed.; Berlin: Mouton de Gruyter, 1991).

⁶⁶ For a system of contrast involving three degrees (spread, constricted, and neutral), see G. K. Iverson, “On Glottal Width Features,” *Lingua* 60 (1983): 331–339; idem, “On the Category Supralaryngeal,” pp. 286–289. For debuccalization more generally, see M. Kenstowicz, *Phonology in Generative Grammar*, 159–160 and, for further discussion of the process, 489 and bibliography there.

A study of airstream dynamics conducted by J. C. Catford may be particularly important in explaining the phenomena at work here.⁶⁷ “Catford argues on theoretical and experimental grounds that ‘the volume-velocity of [h] is often 1000 cm³/s or more, while that of [s] is often of the order of 200 to 300 cm³/s.’”⁶⁸ Catford then contrasts this figure with “the intra-vocal-tract pressure of [s],” which “is likely to be 5 or 6 times that of [h].” In other words, [h] requires greater volume-velocity while [s] involves greater air-pressure in the vocal tract. Therefore, argues Catford, “We feel them to be about equally stressed because they both require about the same initiator power for their production.”⁶⁹ If this variation can be tied to [GW] specification, then the phonological differences between the debuccalized phoneme and *h can be easily related to the phonetic differences between them: The debuccalization of *s¹ produces a segment that does not possess the critical airflow to produce the turbulence necessary for a fricative, because the de-oralization of the phoneme has dramatically lowered the intra-vocal-tract pressure while at the same time retaining the relatively low volume-velocity associated with [s]. Accordingly, it would be very easy for this intermediate phoneme to delete because of its lack of perceptual salience at the phonetic level.

Alternatively, this intermediate phoneme could be subject to the operation of phonological repair rules that would bring it into line with the feature specifications of h. Repair (to *h) at the phonetic level would require the increase of airflow volume-velocity on a magnitude of around 4–5 times that of *s¹ (using Catford’s figures). This repair

⁶⁷ J. C. Catford, *Fundamental Problems in Phonetics* [Bloomington: Indiana University Press, 1977]. We were first alerted to the relevance of Catford’s study by a citation in J. Durand, “On the Phonological Status of Glides,” p. 101.

⁶⁸ J. Durand, “On the Phonological Status of Glides,” p. 101, citing J. C. Catford, *Fundamental Problems in Phonetics*, p. 84.

⁶⁹ J. C. Catford, *Fundamental Problems in Phonetics*, p. 84.

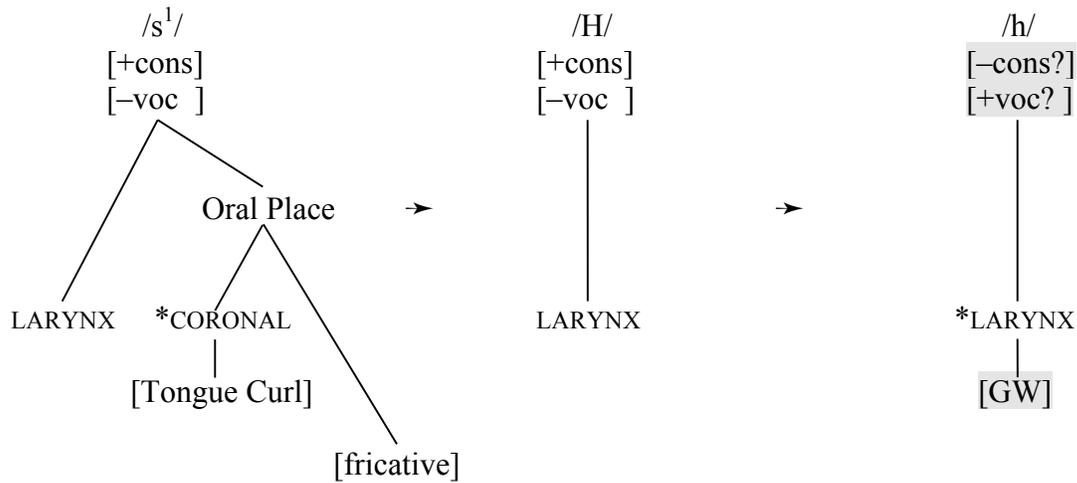
would presumably be associated with the specification of the phoneme as [GW], mandating increased airflow through the feature specification [spread]. At the phonological level, these repair rules have been predicted by Avery and Idsardi, whose statement of “Vaux’s Law” stipulates that phonemes that are marked [fricative] acquire the dimensional specification [GW].⁷⁰ This shift might also require the adjustment of the root node from [+cons, –voc] to [–cons, +voc] (although this adjustment may not be necessary, since *h* patterns with the obstruents in Hebrew).⁷¹

Separating these developments into two separate stages provides a mechanism for unraveling the problem at hand. We take this two-stage development into account by designating this intermediate phoneme with the siglum **H*. In (5) we present the normal process of debuccalization and subsequent repair, with the repaired features shaded in the feature-tree for /h/:

⁷⁰ P. Avery and W. J. Idsardi (“Laryngeal Dimensions,” p. 48) define the rule as: [fricative] → GW. In light of the internal structure of their system (which we are using here), in which these gestures are subordinate to the Oral Place node, we may need to rephrase the rule to [ø stop] → GW. This is a minimal restatement of Vaux’s law. The process has alternately been described as one of adding *supplementary gestures* at the phonetic level (J. O’Brien, “Experimental Approach”).

⁷¹ The cross-linguistic phonemic patterning of *h* is difficult to assess: “A segment like [h] can be interpreted as a high sonority consonant, in line with the view of [h] as a glottal glide or a voiceless vowel. It could also be interpreted as being of lower sonority, because it has frication noise and sometimes patterns with fricatives” (O’Brien, “Experimental Approach,” p. 16; see also R. Lass, *English Phonology*, pp. 156–163; P. Ladefoged, *A Course in Phonetics* [3rd ed.; Fort Worth: Hartcourt Brace, 1993], pp. 65–66; and J. Durand, “On the Phonological Status of Glides,” pp. 79–80). Because /h/ patterns with consonants in Hebrew, it may be that the root node does not need to revert to [–cons, +voc] (although cf. the specification [–cons, +sonant] in J. L. Malone, *Tiberian Hebrew Phonology* [Winona Lake, Ind.: Eisenbrauns, 1993], p. 28).

(5) Debuccalization of $*s^1 > *H > h$ (second-to-bottom row expressed in dimensions, bottom row in gestures, shading indicates repair):



This process is anticipated in its basics by O’Brien: “If you take a voiceless consonant and remove the oral gestures (leaving the laryngeal gestures alone), then this would result in a period of voicelessness with a spread glottis, *something much like [h]*.”⁷² We stress the final phrase because although the phoneme is not /h/, the *default* repair to this consonant can easily be made to articulate [h]. Also, it should be noted, O’Brien is working in a binary system in which phones must be either [spread] or [constrict], but our reliance on the underlying phonology and the underspecification of the phone (along with Purnell and Raimy) allows us to posit an intermediate step unmarked for [GW], and neutral in its phonological specifications ([∅ GW]).

This distinction between the phonemes *H* and *h* has, to our knowledge, not previously been taken into account in discussions of Biblical Hebrew phonology. In fact, it directly contradicts the argument of Bauer and Leander that “dem *h* der Suffixe natürlich keine besonderen phonetischen Eigentümlichkeiten anderen *h* gegenüber

⁷² J. O’Brien, “Experimental Approach,” 5 (emphasis added).

zukommen.”⁷³ Yet, this recognition provides us with the means of explaining deletion and non-deletion of **H* in various intervocalic environments. As will be seen below, the deletion of **H* can be schematized through consideration of the perceptibility of its phonetic realization in sonorant strings (section 5.2), and motivated by reference to metrical concerns (section 5.3).

5. A NEW PROPOSAL

With the featural specifications of the phonemes *U* (i.e., [u] and [w]), *I* (i.e., [i] and [y]), and **s¹ > *H > h* thus resolved, we move on to the specific proposal under review here. Our proposal begins by identifying the morphological structure underlying the 3.m.sg. in Biblical Hebrew as composed of two originally independent morphemes: (a) **-aI-*, historically the bound form ending of dual nouns in Proto-Semitic, but which came to signal bound plurality in the Canaanite languages; and (b) **-Hu̇*, the 3.m.sg. possessive suffix, which originally derived from the morpheme **-s¹ũ*.⁷⁴ This reconstruction is made on the basis of several of the Semitic languages,⁷⁵ and constitutes a large consensus among Semitists. Yet, despite the consensus regarding the morphemes’ origins, the subsequent trajectory of developments undergone by this compound suffix **-aI-Hu̇* remains unclear (see section 3). We propose three derivational stages obtaining in Hebrew (and Phoenician): (1) contraction of the diphthong **aI* in selected morphemic

⁷³ H. Bauer and P. Leander, *Historische Grammatik*, p. 225 §25m.

⁷⁴ E.g., GKC §91g–h; H. Bauer and P. Leander, *Historische Grammatik*, p. 255 §29l’; P. Joüon, *Grammar of Biblical Hebrew*, p. 286 §94d. Cf. the one outlier, F. H. Cryer (“Hebrew 3rd Masc. Sg. Suffix,” p. 210), who suggests that the suffix is “possibly derived from a + hu.”

⁷⁵ E.g., W. R. Garr, *Dialect Geography*, pp. 91–92.

positions (section 5.1); (2) deletion of intervocalic *H in some environments (sections 5.2–5.3); and (3) glide insertion (section 5.4).

5.1. Stage 1: Contraction of the Diphthong *aI > *ē in Selected Morphemic Positions

The contraction of *ay > ē is well-attested throughout the Semitic languages, albeit occurring at different times and in different metrical contexts. Most curiously, in the southern (i.e., Judahite) dialect of Hebrew preserved in the bulk of the Bible’s consonantal and vocalized text (as distinct from northern, Israelian Hebrew⁷⁶), the diphthong underwent two different developments, depending upon word stress: under stress, the diphthong was preserved, and ultimately underwent anaptyxis, yielding forms such as *báyit* (< *bayt < *balt) ‘house’ and *qáyis* (< *qays < *qalš) ‘summer (fruit)’.

When not under stress, the diphthong *ay (< *aI) eventually contracted to *ē, as in *bêt-lêhem* (< *bayt-laḥm) ‘Bethlehem’ and *qêšēk* (< *qays-ik) ‘your fruit’ (Isa 16:9).

Although this realization occurred in later Judahite Hebrew, the same does not appear to be the case in Israelian Hebrew. There, the diphthong seems to have contracted almost universally, apparently sharing an isogloss with Phoenician.⁷⁷ We propose that an early, morphologically-constrained development occurred, specifically in cases where the diphthong *aI occupied the number-gender inflectional position. This development, we maintain, occurred throughout proto-Canaanite:

⁷⁶ Among the voluminous literature on Israelian Hebrew, see, e.g., G. A. Rendsburg, *Israelian Hebrew in the Book of Kings* (Occasional Publications of the Department of Near Eastern Studies and the Program of Jewish Studies, Cornell University 5; Bethesda, Md.: CDL, 2002); and Y. J. Yoo, “Israelian Hebrew in the Book of Hosea” (Ph.D. Diss.; Cornell University, 1999).

⁷⁷ E.g., W. R. Garr, *Dialect Geography*, 35–39; see also Z. Zevit (*Matres Lectionis*, p. 29), who points out that *ay (< *aI) normally did not contract in unstressed syllables in Judahite Hebrew, as evidenced by epigraphs.

(6) Stage 1: Development of 3.m.sg. on bound pl. Nouns in proto-Canaanite:

**-aI-Hū̃ > *-ēHū̄*

This development is likely to be given an autosegmental analysis, in which the underlyingly dual morpheme (**-aI*) was associated with a single V-slot in the skeletal tier, as in (7).⁷⁸ This comports with the cross-Semitic data, in which the vocalic constituent of the case-and-number inflectional morpheme ubiquitously occupies a single V-slot.

(7) Association of the Bi-segmental Inflectional Morpheme **aI* with the Skeletal Tier

$$\begin{array}{rcccl}
 - & C & + & V & (\# / + C\dots) \\
 & | & & \wedge & \\
 - & C & + & a & I & (\# / + C\dots)
 \end{array}$$

This assumption allows us to side-step the objections voiced above that the diphthong **aI* did not normally contract in Judahite Hebrew (and thus, should remain uncontracted here as well). Although the diphthong remained uncontracted in most lexical contexts (where the phoneme **I* was allowed to associate with a C-slot as /y/; e.g., [8a]), this observation did not obtain in the inflectional morpheme, which by Semitic structural rules was limited to a single V-slot (8b). The environment could be word-final (VC#, i.e., **-aI#*), or followed by another morpheme (VCV[C...]; e.g., **-aI-hū̃*; *-aI-hin[na]*; etc.). The only one of the personal pronominal suffixes to which this contraction does not apply is the

⁷⁸ For autosegmental analysis, see J. A. Goldsmith, *Autosegmental and Metrical Phonology* (Oxford: Blackwell, 1990), esp. pp. 8–102.

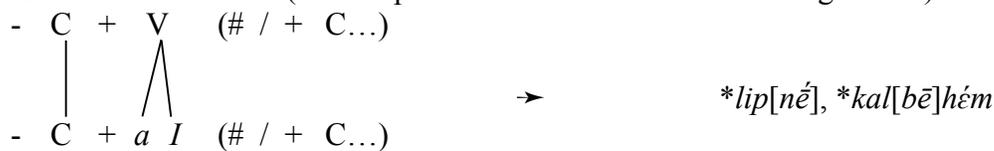
short form of the 2.f.sg. possessive suffix on plural nouns, where the lack of a vowel following **-k* meant that a bare C-slot would follow the inflectional affix -V (**-VC; **-áyik* < **-ayk* < **-aI-k*).⁷⁹ Because this syllable type (i.e., C#) is prohibited in Hebrew, syllabification forced the repair of **-aI-k* from $[\sigma\text{-V}][\sigma\text{C}]\#$ to the more common $[\sigma\text{-VCC}]\#$, as in (8c):

(8) Association of **aI* with the Skeletal Tier:

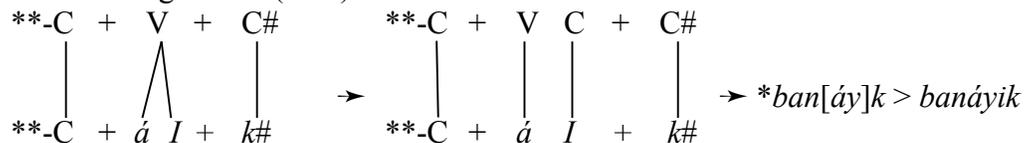
(a) In Lexical Contexts:



(b) As Inflectional Suffix (all except in combination with short 2.f.sg. suffix):



(c) In short 2.f.sg. suffix (**-k#*):



Accordingly, we recommend reading the epigraphically-preserved consonantal structure LPNY as representing /IV-panē/ rather than the typical /IV-panay/ (i.e., using a *mater lectionis* to represent a vowel /ē/ rather than representing a consonantal /y/). Development (8b) most likely accounts for the form of the 3.m.sg. suffix on plural nouns in Moabite

⁷⁹ This would explain why “Aw/ay is preserved when stressed and followed by a consonant belonging to the same syllable” (J. Blau, *Grammar of Biblical Hebrew*, p. 26 §7.3.2.2). It would not, however, apply to the longer form of the 2.f.sg. suffix, found in a few biblical texts of presumably northern provenance (e.g., 2 Kgs 4:2, 3, 7). The Masoretes revocalized these forms, levelling their pronunciation to the expected (short) form of the 2.f.sg.

(YMH /yāmēhũ/ ‘his days’, KAI 181:8; and RŠH /rāšēhũ/ ‘its chiefs’, KAI 181:20) and in rare archaic (or archaizing) Hebrew forms (e.g., *gibbōrēhû*, ‘his warriors’, Nah 2:4; *yādēhû*, ‘his hands’, Hab 3:10; *ēnēhû*, ‘his eyes’, Job 24:23).⁸⁰

5.2. Stage 2: Deletion of Intervocalic *H in Some Environments

In the second stage of our proposed development, we reconstruct the deletion of intervocalic *H in certain environments where its phonetic expression failed to achieve perceptual salience. We trace the phonological environments where *H deleted and where it remained in this section. In section 5.3, we motivate the phoneme’s deletion by formulating a metrical rule. As noted above, the deletion of intervocalic *h did not typically occur in Hebrew (or in the Canaanite dialects more generally). This common preservation of *h is evidenced by the phoneme’s preservation in Hebrew words such as *way-yigbah* (‘he was tall(er)’, 1 Sam 10:23), *gābāhû* (‘they were high’, Isa 3:16), and *nāhārā* (‘daylight’, Job 3:4). This likely had to do with the fact that the [spread] gesture of [h] (caused by its phonological specification of [GW]) was sufficient to retain its perceptual salience even between vowels. Whereas intervocalic *h was overwhelmingly preserved in Hebrew, *H was not. Our proposal below links the preservation or deletion of intervocalic *H to distributional patterns of sonorants in combination with the phoneme’s position relative to accentuation.

That *H (usually assumed by Hebraists to be identical to *h) deletes in certain environments has been challenged, of course. Cryer states that the syncopation of *hē* “is nowhere attested in the extra-biblical sources.”⁸¹ (One wonders how, exactly, a deletion

⁸⁰ H. Bauer and P. Leander, *Historische Grammatik*, p. 255 §29f.

⁸¹ F. H. Cryer, “Hebrew 3rd Masc. Sg. Suffix,” p. 208.

process could be attested without a continuous stream of tradition represented? By the very nature of the evidence, the orthographic lack of <-H-> would in fact constitute evidence that the segment had been deleted.) A more accurate reformulation of this assertion would be to say that there is no evidence that a segment **h/H* should be reconstructed here. But this too is false, since ample cross-Semitic evidence demands that we reconstruct **-Hũ* < **-s¹ũ*, and the existence of the forms *gibbōrêhû*, *yādêhû*, and so on firmly contradict this rather flippant dismissal.

Similarly, Garr cites only Cross and Freedman’s magisterial *Early Hebrew Orthography* as evidence for his assertion that “*he* did not syncopate in any NWS form of [the 3.m.sg.] suffix.”⁸² Garr does not, however, rule out the syncopation of the derivational consonantal segment **H* in prefix- and participial forms of the causative. His assertion is much more moderate than Cryer’s absolute claim that the syncopation of this consonant “is nowhere attested.”⁸³ Rather, Garr’s limitation of the syncopation of putative **h* to forms other than the 3.m.sg. suffix springs from the fact that he considers the surface representation here the result of a different development. As noted above, he traces the development of the Byblian Phoenician ending <-W> as:

(9) Development of Byblian Phoenician 3.m.sg. Suffix on Plural Nouns:⁸⁴
**yômay-hũ* > (via regressive assimilation) **yômay-hũ* > **yômayw* > [yômay (?)]

Other analyses could be put forth that would remain consistent with the deletion of putative **h* (in reality, our **H*). Cross and Freedman themselves do not cite evidence

⁸² W. R. Garr, *Dialect Geography*, 106, citing F. M. Cross and D. N. Freedman, *Early Hebrew Orthography*, p. 15.

⁸³ F. H. Cryer, “Hebrew 3rd Masc. Sg. Suffix,” p. 208.

⁸⁴ According to W. R. Garr, *Dialect Geography*, p. 106, see also p. 108.

that would substantiate Garr's claim. Although they do cite the cognate Ugaritic ending *-ēhū (= our *-ē-Hū) their suggested development of Byblian ŠNTW ('his years'; KAI 4:5; 6:3; 7:5; 10:9), is completely amenable to an analysis assuming syncope of *H:

(10) Development of Byblian WŠNTW:⁸⁵

*šānātayhū (= our *šānāt-al-Hū) > *šānātēhū > *šānōtēw

Garr's assertion is further ruled out by the data he cites in the following paragraph.⁸⁶ In Standard Phoenician, the 3.m.sg. suffix on plural verbs is realized graphically as <-Y>, apparently representing the phonetic value [-êyū/ī],⁸⁷ which he derives directly from an underlying *-ay-hū. (Other than differing in the precise specifications of the phonemes *h vs. *H, we submit that Garr's derivation is essentially correct.) The precise mechanisms of this development are cognate to the one discussed here. They have been analyzed by J. Huehnergard, and will be referred to again below.⁸⁸

The question then becomes whether we might definitively identify those environments where *H deletes in Biblical Hebrew. As noted above, the phoneme unquestionably deletes in certain forms of the causative stem; we treat this environment for deletion below as well. Throughout the possessive suffix paradigm, the synchronic alternation of intervocalic *H with ∅ is somewhat difficult to predict. On singular nouns

⁸⁵ According to F. M. Cross and D. N. Freedman, *Early Hebrew Orthography*, p. 15.

⁸⁶ W. R. Garr, *Dialect Geography*, p. 107.

⁸⁷ W. R. Garr, *Dialect Geography*, p. 107.

⁸⁸ J. Huehnergard notes specifically that *hē* seems to have syncopated ubiquitously in intervocalic positions ("The Development of the Third Person Suffixes in Phoenician," *Maarav* 7 [1993]:187 n. 9, citing personal communication with S. Kaufman). See previously F. M. Cross and D. N. Freeman, "The Pronominal Suffixes of the Third Person Singular in Phoenician," *JNES* 10 (1951): 228–230, esp. p. 229; and C. Krahmalkov, "Studies in Phoenician and Punic Grammar," *JSS* 15 (1970): 185–188.

ending in vowels and on plural nouns and some prepositions, the 3.f.sg. preserves the phoneme *h* (e.g., *'abīhā*, 'her father'; *'ēlēhā*, 'to her'). Only the final vowel is deleted in the same morph on singular nouns and some prepositions, but the **H* is retained (e.g., *zar'āh*, 'its seed', *'immāh*, 'with her'). Similarly, the 3.pl. suffixes preserve the **H* in most environments (e.g., *libābēhen*, 'their heart'; *bānēhen*, 'their sons'; *lāhen*, 'to them'), although in some places, such as on singular nouns, the phoneme is deleted (*qadmātān*, 'their former estate', Ezek 16:55).

Cross-linguistic comparison provides some insight into the phonological environments in which this deletion occurred. Both the deletion and preservation of **H* can be explained through reference to the sonority hierarchy of the segments on either side of the **H*. Many languages exhibit a graded scale of sonority, in which [–consonantal, low] phonemes, such as *a*, are ranked as more sonorous than [high] (i.e., high vocoid [HV]) phonemes, such as **I* (*i* [–cons] and *y* [+cons]) and **U* (*u* [–cons] and *w* [+cons]). Further down the hierarchy of sonority lie the [+cons] (i.e., obstruent) segments in the order given in (11):

(11) *a*, HV, liquid, nasal, voiced fricative, voiceless fricative, voiced stop, voiceless stop⁸⁹

Dell and Elmedlaoui have argued compellingly that Imdlawn Tashlhiyt Berber assigns syllable nuclei through recursive iteration of an algorithm CS(*x*) (i.e., the “Core Syllable” algorithm in which *x* is a segment type ranging through the hierarchy in [11]).⁹⁰

⁸⁹ Adapted from F. Dell and M. Elmedlaoui, “Syllabic Consonants and Syllabification,” p. 109.

⁹⁰ F. Dell and M. Elmedlaoui, “Syllabic Consonants and Syllabification”; idem, “Syllabic Consonants in Berber.” See A. Prince and P. Smolensky, *Optimality Theory: Constraint*

In each iteration, proceeding from most sonorous to least sonorous, CS(*x*) scans strings of segments left-to-right and assigns syllable-nuclear status to any available (i.e., unassigned) segment with an unassigned segment adjacent to the left. This segment to the left is then assigned as the syllable onset. For example, the string **t-!IzrU al-In* is syllabified as *t-!Izr[_σU a]l-In* in the first pass of CS, namely, CS(*a*).⁹¹ In its second iteration, CS(HV), which seeks out the High Vowels, the string is syllabified as [_σt-!I]zr[_σU a][_σ l-I]n. Both **I* segments are available for identification because both are unassigned and their respective left-adjacent segments are not otherwise committed. *U*, however, has already been assigned by CS(*a*) as the onset of the syllable [_σU a] and therefore cannot be assigned nuclear status. After the iterations of CS(*x*) through the liquids, nasals, etc., any remaining unassigned segments are incorporated into these core syllables as elements of complex onsets or codas. Because Imɣlawn Tashlhiyt Berber phonology allows every kind of consonant to occupy the syllable nucleus position, the final syllabification is found according to (12):

(12) **t-!IzrU al-In* → [_σt-!I] [_σzr] [_σU a] [_σ l-I]n → [! ti.zR.wa.lin]
 (in which R signifies a [r] in the position of the syllabic nucleus)

Positing a similar process in Hebrew proves to be the key for understanding the conditions determining the environment allowing the deletion of **H* in the 3.m.sg. suffix on plural nouns (see below, section 5.3). First, however, we must adapt the Berber model

Interaction in Generative Grammar (Malden, Mass.: Blackwell, 2004), pp. 14–26 for a revision to the theory. Although couched in the synchronic Optimality Theory framework, this revision is otherwise consonant with the original model proposed by Dell and Elmedlaoui.

⁹¹ F. Dell and M. Elmedlaoui, “Syllabic Consonants and Syllabification,” pp. 111–112. Dell and Elmedlaoui use the siglum “!” to mark so-called “emphatic” pronunciation, which spreads throughout strings of segments (“Syllabic Consonants and Syllabification,” pp. 118–119).

proposed by Dell and Elmedlaoui to fit the phonotactic constraints of Hebrew grammar. Hebrew prosody allows for syllables of types CV(:), CVC, and, when under stress, CV:C.⁹² When syllables CV are unaccented, the vowel has normally reduced to a vocal *shewa* (e.g., the first syllable in **qadōšīm > qədōšīm* ‘holy ones’). Historically, Hebrew also allowed for syllables with complex rimes (CVCC), at least word-finally.⁹³ Thus, Hebrew is subject to the parameters regarding syllabic onsets similar to those in Berber⁹⁴:

(13) All syllables are required to have a consonantal onset.

The same is not the case with regard to Berber’s allowance of consonantal syllabic nuclei. Like most languages, Hebrew permits only vowels to occupy syllable nuclei. But we must elaborate the system provided by Dell and Elmedlaoui here, since Hebrew’s vocalic repertoire contains not only low (*a*) and high (*i*, *u*) vowels, but also—even at a relatively early stage—the mid-range vowels *e*, *ε*, and *o*. In order to capture generalizations pertinent to this three-level vocalic system of Hebrew (low, middle, high), we refer to the two height features of our privative phonological system. Accordingly, the low vowel *a* is designated [low], the mid-range vowels *e*, *ε*, and *o* are [ø high, ø low], and the high vowels *i* and *u* (along with their consonantal counterparts) are [high]. In this system, sonority can be ranked, as in (11), in a low-to-high scalar system of vowels by

⁹² In these notations, the siglum “V:” symbolizes quantitatively long vowels.

⁹³ In words where the two constituent consonants of the rime were identical (e.g., *‘am < *‘amm*) or homorganic (as in *‘ahat < *‘ahatt < *‘ahad-t*, ‘one [f.sg.]’), the gemination was eventually lost, however, normally leaving syllables of type CVC and, when falling under accent, CV:C. In *CVCC syllables with heterorganic sequences, an anaptyctic vowel was normally inserted to alleviate the complexity of the rime (e.g., **malk > melek*).

⁹⁴ We ignore here Berber’s ability to begin post-pausal strings with onsetless syllables (F. Dell and M. Elmedlaoui, “Syllabic Consonants and Syllabification,” pp. 119–120), although Arabic—and, we suspect, some stages of Canaanite—demonstrates this ability as well.

interpolating the mid-range vowel between the two other members. Interpolation makes intuitive sense in this schema: The mid-range vowels (MV) share in common with *a* the implicit specification [ø high]. With the high vowels (HV) they share the implicit specification [ø low]. We therefore propose that (11) can be augmented for Biblical Hebrew by introducing the minimal hierarchy in (14), where virgules (|x|) mark the sonority of phoneme *x*:

(14) |*a*| > |MV| > |HV| ...

Since Hebrew did not permit consonantal nuclei,⁹⁵ the relevant sonority hierarchy can be limited to that portion of the segmental repertoire expressly listed in (14).

As a result of the morphologically-constrained process $*s^1 > H$, four different syllabic environments developed in Canaanite:

- (i) In word-initial environments in the causative stem, $*H$ (resulting from underlying derivational- $*s^1$) was retained unproblematically as the resultant aspirant *h* (e.g., *hišmîd*, ‘he destroyed’; *hû*[ʔ], ‘he’; etc.), regardless of the following vowel’s quality. There is no gradient of sonority across the $*H$ here, at least at the lexical level.
- (ii) In the prefixal forms of the causative stem ($*Cu-Ha-R_1R_2iR_3$), the debuccalized consonant formed the onset of an unstressed, closed syllable (*.HaR₁.*), in which the following vowel was ranked at the highest level on the sonority hierarchy (see [14],

⁹⁵ D. Testen (“The Significance of Aramaic $r < *n$,” *JNES* 44 [1985]: 143–146) has convincingly argued that proto-Semitic did allow for consonantal nuclei in extremely limited conditions, but that its various daughter languages, which did not permit consonantal nuclei, were forced to deal with these consonants in various ways.

above). The preceding vowel (reconstructed plausibly as *u*) was lower on that hierarchy ($|u| < |a|$).

(iii) In cases of the singular suffixes **-Hũ* and **-Hǎ*, the syllable was an open one and the phonological environment would have varied, depending both on the morphological unit to which the suffix had been appended, and on the vowel reconstructed before the suffix. In all cases, the accent was positioned over the linking vowel, on the penult.

(iii.a) On plural nouns, the suffix **-Hũ* was affixed immediately after the high vowel **ē*. This created an environment in which the vowel preceding the **-H* was more sonorous than the vowel following it ($|e| > |u|$); i.e., *falling sonority*. On plural nouns with a 3.f.sg. suffix **-Hǎ*, the resulting environment was one of *rising sonority* across the **H* ($|e| < |a|$).

(iii.b) With regard to singular nouns, some researchers argue that the suffixes remained affixed to the word-final case vowels (as would have been the case in the predominantly tripartite system of Ugaritic, for example. However, as Canaanite developed into its various regional expressions, the case system was in the process of collapsing as a consequence of the loss of final short vowels throughout the language.

According to one predominant view, Hebrew matched the quality of the intervening case-vowel to the vowel of the suffix: **kalbú-Hũ*, ‘his dog’ (nom., acc., gen.) vs. **kalbá-Hǎ*, ‘her dog’ (nom., acc., gen.). Accordingly, the progression involved the tonic lengthening of the short case vowel and the subsequent deletion of **H*:

*-úHu > *-úH > *-óH > *-ó.⁹⁶ Indeed, this derivation is attractive, since it motivates the use of consonantal <-H> in EH to mark the 3.m.sg. suffix on singular nouns.⁹⁷ However, if this derivation were to prove to be the case, we would have a stable sonority gradient across the *H (|u| = |u|); this would (wrongly) predict in the system described below that *H should have been preserved as *h*.

Others have suggested that, in contrast to Phoenician (where the case system was preserved long enough to distinguish between the nom.-acc. and the gen. cases),⁹⁸ the linking vowel was leveled to *a* throughout Hebrew.⁹⁹ Our analysis presented here suggests that the linking vowel of the nominative-accusative in Biblical

⁹⁶ Adapted from F. M. Cross, “Some Problems in Old Hebrew Orthography,” p. 352; idem, “A Literate Soldier: Lachish Letter III,” in *Biblical and Related Studies Presented to Samuel Iwry* (ed. A. Kort: Winona Lake, Ind.: Eisenbrauns, 1985), p. 45 n. 3; and idem, “The Cave Inscriptions from Khirbet Beit Lei,” in *Near Eastern Archaeology in the Twentieth Century* (ed. J. A. Sanders; Garden City, N.Y.: Doubleday, 1970), p. 303 n. 3; both essays were subsequently republished in idem, *Leaves from an Epigrapher’s Notebook* (HSS 51; Winona Lake, Ind.: Eisenbrauns, 2003), p. 130 n. 3 and p. 167 n. 3, respectively. See also D. N. Freedman, “Massoretic Text and the Qumran Scrolls,” p. 93; and T. O. Lambdin and J. Huehnergard, *The Historical Grammar of Classical Hebrew* (unpublished manuscript; Cambridge, Mass., 1998), p. 23, cited in R. Hasselbach, “The Pronominal Suffix of the Third Masculine Singular in Hebrew,” *Harvard Working Papers in Linguistics* 8 (2003): 48.

⁹⁷ R. Hasselbach, “Pronominal Suffix,” pp. 50–54. Hasselbach’s study is astute, but she assumes that *aw contracted to *ō* in BH in a single sound change. Accordingly, because this phoneme fell together with the realization of the (early) Canaanite shift, *ā > *ō*, it should have been realized graphically in EH in the same way that the product of the Canaanite shift was (i.e., <-Ō>). Yet, this charge neglects the early operation of a contracting rule (see below), the output of which was identical to that of the Canaanite shift (which normally occurred in the middle of words), but occurred only at the *end* of words (and was therefore marked with a final *mater*); e.g., F. I. Andersen and A. D. Forbes, *Spelling in the Hebrew Bible*, p. 61. D. N. Freedman (“Massoretic Text and the Qumran Scrolls,” p. 93) admits that “the significance of the shift from *he* to *waw* is not altogether clear.”

⁹⁸ This dyptotic distinction remained expressed in Phoenician orthography, which represented the semi-vocalic glides but not fully vocalic segments: *kalbV-Hū > *kalbō (nom.-acc., expressed graphically as <KLB>) vs. *kalbi-Hū > *kalbiyū (gen., written <KLBY>). See J. Huehnergard, “Development of the Third Person Suffixes.”

⁹⁹ E.g., GKC §91d; H. Bauer and P. Leander, *Historische Grammatik*, p. 226 §25r; W. R. Garr, *Dialect Geography*, p. 103; F. I. Andersen and A. D. Forbes, *Spelling in the Hebrew Bible*, p. 66.

Hebrew was, in fact, *a*: **kalbá-Hũ* in all forms but the 2.f.sg., where the *i*-vowel had been drawn from the original longer form of the suffix (*-*kĩ* > *-*ik* rather than *-*ak*). As a result, the sonority gradient across the **H* of the 3.m.sg. suffix was *falling* (|a| > |u|) while it was stable in the 3.f.sg. (|a| = |a|). As will be seen below, making this assumption allows us to explain the developments under scrutiny here with a simple rubric.¹⁰⁰

- (iv) In cases of the 3.pl. pronominal suffixes, we assume an early vowel leveling, lowering, and laxing (i.e., loss of [ATR]) of the suffixes in Hebrew; the consonantal coda of the two syllables remained distinct (3.m.pl.: *-*Húm[ũ]* > *-*Hém*; 3.f.pl. *-*Hín[na]* > *-*Hén*). Regardless of whether we consider the vowel as [tense] (*e*) or [ø tense] (*ε*), the height remains mid-level.
- (iv.a) On plural nouns (**kalbē-Hém* and **kalbē-Hén*, ‘their [m. and f., respectively] dogs’), the presence of the accent on the first syllable of the suffix was retained. In all likelihood, this accentuation was due to the originally disyllabic structure of the suffix (ca. *-*Húm[ũ]*, *-*Hín[na]*) which was shortened in later stages of the Canaanite dialects. Thus, the sonority gradient across the **H* was *stable* (|e| = |ε|), with the accent following the **H*.
- (iv.b) In contrast, both the **H* and the following vowel were lost on singular nouns (*kalbām*, *kalbām*, ‘their [m. and f.] dog’). For reasons which will be seen below, we must reconstruct a situation in which the linking vowel preceding the suffix on

¹⁰⁰ If we have correctly reconstructed the phonological environment of the suffix here, then we must only concede that <-H> marking the 3.m.sg. suffix on singular nouns in EH served either consonantly (representing /-hu/, in which case the final vowel was not being marked, somewhat unexpectedly), or as a *mater lectionis* (in which case the developments described below had already happened and the letter represented /-ō/).

single nouns was (a). This linking vowel drew the accent, likely on analogy with the other singular forms (**kalbá-Hũ*, **kalbá-Hǎ*, **kalbá-Hem*, **kalbá-Hen*). The sonority gradient was therefore *falling* across **H*, and *followed* the accent.

These various environments may thus be schematized as in (15):

(15) Table of environments surrounding **H*:

| | Morphemic Environment | Position of * <i>H</i> with respect to tone | Sonority Gradient | Effect |
|---------|---|---|---------------------|---------------------------------------|
| (i) | C-stem, word-initial: *# <i>Hi-R₁R₂iR₃</i> , *# <i>Ha-R₁R₂iR₃</i> | Pre-tonic | None | Preservation * <i>H</i> > <i>h</i> |
| (ii) | C-stem, non-initial: *# <i>Cu-Ha-R₁R₂iR₃</i> | Pre-tonic | Rising (u < a) | Deletion * <i>H</i> > \emptyset |
| (iii.a) | (1) m.sg. suff. on pl. Ns * <i>-ê-Hũ</i> | Post-tonic | Falling (e > u) | Deletion * <i>H</i> > \emptyset |
| | (2) f.sg. suff. on pl. Ns * <i>-ê-Hǎ</i> | Post-tonic | Rising (e < a) | Preservation * <i>H</i> > <i>h</i> |
| (iii.b) | (1) m.sg. suff. on pl. N * <i>-á-Hũ</i> | Post-tonic | Falling (a > u) | Deletion * <i>H</i> > \emptyset |
| | (2) f.sg. suff. on pl. N * <i>-á-Hǎ</i> | Post-tonic | Stable (a = a) | Preservation * <i>H</i> > <i>h</i> |
| (iv.a) | (1) m.pl. suff. on pl. N * <i>-ê-Hém</i> | Pre-tonic | Stable (e = e) | Preservation * <i>H</i> > <i>h</i> |
| | (2) f.pl. suff. on pl. N * <i>-ê-Hén</i> | Pre-tonic | Stable (e = e) | Preservation * <i>H</i> > <i>h</i> |
| (iv.b) | (1) m.pl. suff. on sg. N * <i>-á-Hem</i> | Post-tonic | Falling (a > e) | Deletion * <i>H</i> > \emptyset |
| | (2) f.pl. suff. on sg. N * <i>-á-Hen</i> | Post-tonic | Falling (a > e) | Deletion * <i>H</i> > \emptyset |

The pattern that emerges from this table is quite clear, and attests to the importance of the sonority hierarchy of Hebrew vowels in defining those environments where **H* deletes.

In all cases of post-tonic **H*, a *falling sonority* gradient across **H* occasions deletion (iii.a.1, iii.b.1, iv.b.1, iv.b.2). The only instance in which a *rising sonority* gradient across **H* occasions deletion is in example (ii). But here, the environment for deletion is pre-tonic, meaning that it is the mirror image of the post-tonic *falling* gradient. Alternately stated, if the sonority gradient across **H* is *falling* as one moves away from the tonic

syllable nucleus *in either direction*, **H* will delete. These observations can be captured in a single statement evaluating direction and distance from the tonic syllable nucleus, as in (16). Here, we use the terminology of “outside vowels” (V_{outside} , i.e., those vowels to the left of **H* pre-tonically or to the right of **H* post-tonically) and “inside vowels” (V_{inside} , i.e., those vowels closer to or identical with the tonic syllable nucleus):

- (16) Unified statement on the deletion of intervocalic **H*:
 (a) If $|V_{\text{outside}}| < |V_{\text{inside}}|$ across **H*, then delete **H*.
 (b) Otherwise, preserve **H*.

This very simple rule explains all of the instances of the deletion and preservation of **H* detailed so far. Statement (16a) describes conditions (ii), (iii.a.1), (iii.b.1), (iv.b.1), (iv.b.2). Statement (16b) describes conditions (i), (iii.a.2), (iii.b.2), (iv.a.1), and (iv.a.2). However, there is one set of possessed nouns that we have not yet dealt with, namely, those singular nouns whose bound forms somewhat unexpectedly end in the long vowel - \bar{i} (i.e., **'abī-*, ‘father’; **'ahī-*, ‘brother’). Infallibly, the 3.f.sg. suffix attaches to both as - $\bar{h}\bar{a}$ (*'ābīhā*, Gen 29:9, 12; etc.). This result is predicted by our model, where V_{outside} is *a*, whose sonority is greater than that of V_{inside} (*i*). But algorithm (16) as stated is insufficient for capturing the alternation that occurs in cases of ‘his father’ and ‘his brother’.

Although *'ābīw* (e.g., Gen 26:15 [2x], 18 [2x]) occurs ubiquitously, it alternates with a seldom-used form *'ābīhū* (seven instances: Judg 14:10, 19; 16:31; 1 Kgs 5:15; Zech 13:3; 1 Chr 26:10; 2 Chr 3:1). The alternation between the prevalent *'āhīw* (e.g., Gen 4:2, 8 [2x]) and the seldom-used *'āhīhū* (Jer 34:9; Mic 7:2; 2 Chr 31:12) displays a similarly lopsided distribution. According to our algorithm (15), we would expect the **H* to remain, but this clearly does not happen in the vast majority of instances. Therefore, we

must restate our algorithm in such a way as to capture the apparent anomaly of the strikingly prevalent forms *'ābîw* and *'āḥîw*. We can do this easily in one of two ways. First, we could rewrite the rule as (17), with an intermediary rule designed to address cases of **-iHu*:

- (17) Unified statement on the deletion of intervocalic **H*:
- (a) If $|V_{\text{outside}}| < |V_{\text{inside}}|$ across **H*, then delete **H*.
 - (b) If V_{outside} and V_{inside} are both high vocoids, then favor deletion of **H*.
 - (c) Otherwise, preserve **H*.

But this restatement of (16) seems arbitrary; (17b) lacks specific motivation, and does not prescribe the deletion of **H* accurately enough. It is probably better to revise our statement of the sonority hierarchy, splitting the high vocoids (*i*, *u*) apart from one another and recognizing that the few cases of *'ābîḥû* and *'āḥîḥû* where **H* has been preserved as *h* are likely due to orthographic hypercorrection by a scribe—or, if they are at all representative of a variety of spoken Hebrew, of morphological analogy towards *'ābîḥā* and *'āḥîḥā*.¹⁰¹ The proper restatement of the sonority hierarchy in Hebrew would be:

- (18) $|a| > |MV| > |I| > |U| \dots$

Together, the sonority hierarchy in (18) and the algorithm in (16) account for all occurrences of the deletion of **H*, so long as we allow for surface-level hypercorrection in a few forms preserved in the MT.

¹⁰¹ The same tendency may explain the archaic or archaizing forms of the 3.m.sg. suffix on plural nouns (*-êḥû*; see above).

5.3. Autosegmental Motivation for Deletion of Intervocalic *H

This reformulation of the sonority hierarchy in Hebrew allows us to motivate the deletion of *H in another salient way as well, namely, at the level of the skeletal tier. We again take into account the skeletal tier and its interactions with the phonemes *I and *U.

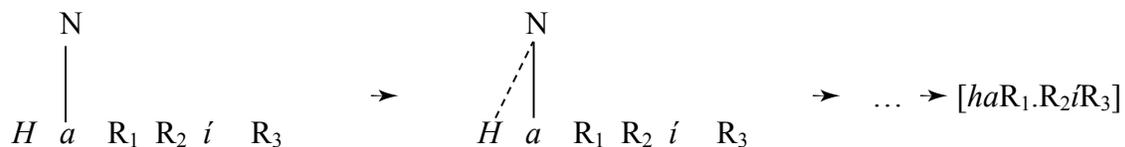
Remember that *I and *U can surface as either [+cons] or [-cons], depending on their position within the word. The phoneme *I has slightly greater sonority than *U, by (18).

Moreover, a syllabification process similar to Dell and Elmedlaoui's algorithm CS(x) will scan left-to-right for syllable nuclei.

5.3.1. Operation of CS(a): Retention of *H

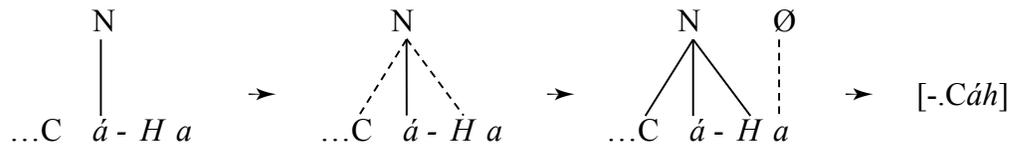
In the first pass of the algorithm, CS(a), nuclear status is assigned to all available *a*-vowels. After each assignment of an *a*-vowel, the nearest consonant to the left is selected as the corresponding syllable onset. In cases such as the unprefixated C-stem infinitive, *#Ha-R₁R₂iR₃, the only available consonant for selection is the dramatically underspecified segment *H*, whose remaining [+cons, –son] specifications license attachment to the corresponding syllable onset C-slot, as in (19).

(19) Operation of CS(a) on unaffixed C-stem infinitives and imperatives:



The same process can be used to describe the syllabification of the 3.f.sg. suffix on singular nouns, and the corresponding preservation of **H* as *h*, as in (20). Because $CS(a)$ scans left-to-right, it selects as the onset for the first nucleus *a* the final C of the lexical stem. A second rule must apply here in the Hebrew version of the algorithm: the nearest preferred segment to the right capable of attaching to a C-slot is recruited to serve as the syllable coda on a tonic syllable. Thus, the right-adjacent segment **H*, which is otherwise not preferred as a consonant, fills this role adequately. As a result, the final *a*, which does not have an available left-adjacent segment to serve as its syllable nucleus, is left unattached to the skeletal tier and as a result, deletes (20). In many respects, we may be seeing part of the phonological motivation of the loss of final short vowels in the late-Canaanite transition to Hebrew.

(20) Operation of $CS(a)$ on 3.f.sg. suffixes on singular nouns:

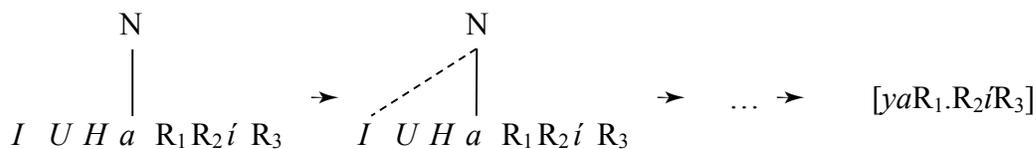


In both cases (19) and (20), because **H* is linked to the skeletal tier, it is allowed to persist in the phonological representation, and it is assigned the feature specifications of its nearest phonemic counterpart, *h*—this is the relatively insignificant addition of the gesture [GW] as described above (section 4.3). This basic operation of $CS(a)$ explains conditions (i) and (iii.b.2) in chart (15).

5.3.2. Operation of CS(a): Deletion of *H

This is not to say, however, that *H is the preferred segment to assign to a C-slot. In fact, if there is anything more suited to such an assignment, that phoneme receives the linkage. (Suitability here seems to qualify as possessing *any* specification at the dimensional level.) This is true for the prefixed forms of the C-stem, where the algorithm CS(a) prefers the prefix consonant over *H as its syllable onset. This may be a sign that the rule looks as far to the left as possible to assign an onset. Since there is no more consonantal segment to the left of *I, this becomes the default selection.

(21) Operation of CS(a) on prefixed C-stem forms (imperfects and participles):

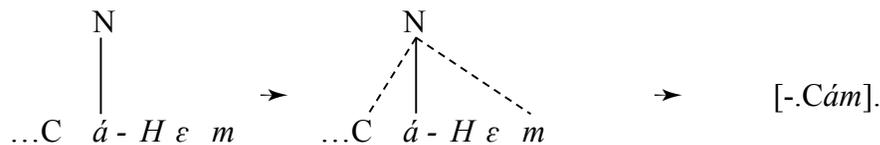


As shown by (21), *U is not a suitable onset (although it theoretically could fulfil such a role, surfacing as [w]). It is unclear what the motivation for selecting *I as the onset is, but it likely has to do both with that segment's word-initial position and paradigmatic pressure. Notice that this part of the algorithm seems to take into account the fact that if U were selected as the onset, *I would be stranded (resulting in **waR₁R₂iR₃), and the personal pronominal marker of the 3.m.sg. would no longer be present in the form. A more thoroughgoing phonological analysis could attempt to define the exact parameters at stake here, but for the present we leave this issue to the side.¹⁰²

¹⁰² We ignore here the possibility that the underlying representation actually entailed the affixation of the personal prefix directly onto the C-stem morpheme (*y-Ha-R₁R₂iR₃), but this remains a possibility. If so, our parameters for onset selection in CS(a) would naturally be easier to write.

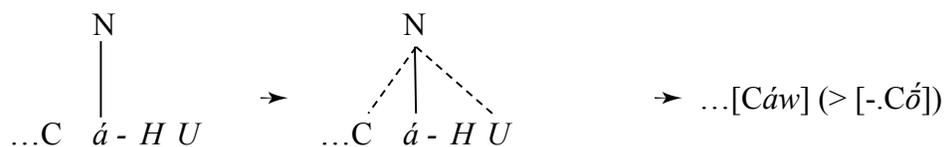
A coda-selection rule, as in (20), also seems to have operated in the deletion of the 3.pl. suffixes on singular nouns. Here, the selected coda is the nasal consonant (*m* or *n*) at the end of the 3.pl. morpheme. Evidently, neither **H* nor the mid-vowel **ε* was licensed to serve as a coda.

(22) Operation of CS(*a*) on 3.pl. suffixes on singular nouns:



Finally, the same selection of a potentially consonantal segment to the right of an adjacent **H* is seen in the 3.m.sg. suffix on singular nouns. Here, too, the selected high vocoid segment **U* is hardly a perfect fit for the C-slot forming the code of the syllable. Nonetheless, it apparently satisfies the grammar's constraints for the slot better than does the **H*:

(23) Operation of CS(*a*) on 3.m.sg. suffixes on singular nouns:



These effects of the operation of CS(*a*) explain conditions (ii), (iii.b.1), and (iv.b.1–2) in chart (15).¹⁰³

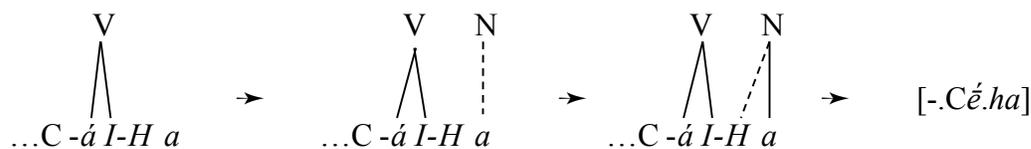
¹⁰³ Compare J. L. Malone (*Tiberian Hebrew Phonology*, pp. 54–55), where the deceptively technical apparatus is extremely vague with the reasons for this development. Malone attributes this development to the general category of “suffix whittling.”

5.3.3. Constraints on the Operation of CS(a)

In the two preceding sections, we have demonstrated that the algorithm CS(a) follows three procedures. First, it scans left-to-right, assigning a syllable nucleus (N) to each *a*-vowel it encounters. Before moving on, it scans leftward for a suitable onset. The suitable onset can be *H, if at the beginning of a word (see [19]), but if segments precede *H, CS(a) evaluates those segments for suitability. We have one final parameter to define for the operation of CS(a): Since the algorithm can search across *H for syllable onsets (and codas), why does the 3.f.sg. suffix on plural nouns (...C-ē-Hã) not syllabify to [σ...][σCa] > [-.Ca]? The answer necessarily lies in the fact that ē is the result of a linking rule that has already occurred. As we showed above (section 5.1, example [8b]), the first stage in this process is the linkage of *aI to the skeletal tier. That means that the phoneme ē, in whatever graphic expression we give it, is already linked to the skeletal tier in the input to CS(a), as in (23a). Line-crossing prohibitions¹⁰⁴ prevent CS(a) from scanning any further left of *H for the associated nuclear onset:

(23) Operation of CS(a) on 3.f.sg. suffixes on plural nouns:

(a) Input to CS(a): (b) Operation of CS(a):



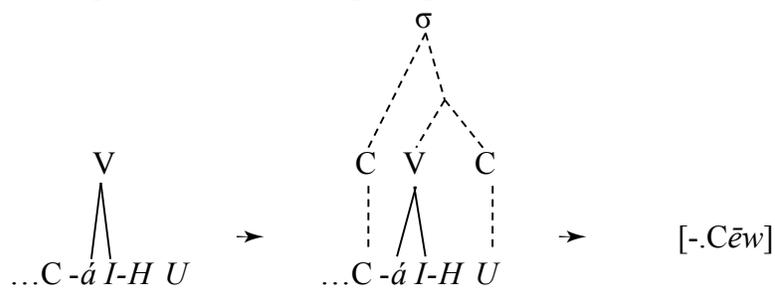
This line-crossing prohibition thus explains the forms of the 3.f.sg. on plural nouns (iii.a.2), and, in a subsequent iteration of the algorithm CS(ε), the 3.m.pl. and 3.f.pl.

¹⁰⁴ E.g., J. A. Goldsmith, *Autosegmental and Metrical Phonology*, p. 47.

suffixes on plural nouns (iv.a.1–2) in chart (15). The only remaining development to explain is that of the 3.m.sg. suffix on plural nouns, (iii.a.1) in chart (15).

In light of the rules already proposed, the explanation can be found simply by extending the scope of the rule that links **aI* to a single V-slot before the operation of *CS(a)*. If we assume that it is not only the vowel that is linked in this rule, but the onset and coda consonants of the syllable as well, then the development is very easy to explain:

(24) Operation of V-linking rule *prior* to *CS(a)*:



This aspect of the rule does not operate in the 3.f.sg. on pl. nouns (**...C-áI-Hā*) or on the 3.pl. suffixes (**...C-áI-Hem/n*) because neither *a* nor *ε* is licensed to fill a C-slot. The syllable **CáI > *Cé* is left open in both cases, but is ineligible for further linkage, as shown in (23). In addition, we must observe that the rightward scanning for a coda consonant in (24) does not move across a following vowel (i.e., **...C-aI-Hém* does not become the impossible form ***...Cém*). This observation allows us to reclassify our three instances of rightward coda scanning ([20], [22], and [23])—in all of which the accent is on the linking vowel—not as instances of *CS(a)*, but actually as instances of linking the number-gender morpheme to the skeletal tier. Accordingly, the procedure of rightward scanning for syllable codas can be omitted from *CS(a)*. The selection of codas for the

algorithm CS(*x*) is therefore best left for a later point in syllabification, as originally posited by Dell and Elmedlaoui.¹⁰⁵

The relevant developments resulting in the deletion of **H* can be summarized as in (25):

(25) Stages in the development of the personal pronominal suffixes:

1. Debuccalization of **s*¹ > **H* in selected morphemes (causative derivational prefix and third-person pronominal suffixes and independent pronouns)
2. Linkage of number-gender morpheme to skeletal tier
 - a. Link all licensed vocoids to the V-slot syllable nucleus
 - b. Scan leftward for a consonantal onset (including HV)
 - c. Scan rightward for a licensed consonantal coda (including HV)
3. Operation of CS(*a*), left-to-right
 - a. Link any unassigned *a* with an unlinked consonant to its left to a syllable nucleus
 - b. Scan leftward for a consonantal onset (including HV)
4. Operation of CS(*ε*), left-to-right
 - a. Link any unassigned *ε* with an unlinked consonant to its left to a syllable nucleus
 - b. Scan leftward for a consonantal onset (including HV)
5. Add [GW] gesture to all **H* linked to a syllable

Together, these five rules in forms of the possessive pronominal suffixes conform precisely to epigraphic sources and to forms reconstructed from Tiberian Hebrew.

In summary, we can correlate our solution here with a process that Nevins and Chitoran have previously described as the result of a sonority hierarchy that prefers the most sonorous segments to occur in the syllable nucleus: “syllabification and resyllabification are driven by sonority sequencing... instances of vowel–vowel

¹⁰⁵ This is a crucial point in our argument, since imputing a rightward scansion of CS(*a*) for a syllable coda *before* the operation of, for example, CS(*U*) would incorrectly predict that forms such as the 3.m.sg. imperfect form **Ia-s*¹*ūb* ‘he will return’ should surface as [yas¹]*ūb* → ***yaš* or the like.

sequences will often trigger resyllabification, in which a vowel is placed in a non-nuclear position.”¹⁰⁶

This realization was recorded in the orthography of Byblian Phoenician as the grapheme <-W> (ŠNTW /šanōtēw/, ‘his years’, KAI 4:5; 6:3; 7:5; 10:9; YMW /yāmēw/, ‘his days’, KAI 10:9). Similarly, the same process resulted in rare EH exemplars of the suffix as <-W> (e.g., ‘NŠW /’anašēw/ ‘his men’; *HI Lach* 3: Rev. 1–2). Compare also BH ‘ābîw < *’ābîhū ‘his father’, written <’BYW>, and epigraphic <R’W> ‘his fellow’, /ri’ēw/. Several tokens of the same orthographic practice occur in the biblical text as well, if we may judge from the *ketiv* readings with <-W> that have been “corrected” by Masoretic *qere* readings with the standard <-YW>. All-in-all, this analysis suggests that Cross and Freedman were correct in positing a development along the lines of (10)—reprinted here as (26)—even if they did not fully understand the phonological developments.

(26) Development of Byblian WŠNTW:¹⁰⁷
 *šanātayhū (= our *šanāt-al-Hū) > *šanātēhū > *šanōtēw

Furthermore, it confirms the basic intuition vocalized by H. Bauer and P. Leander that *h “disappeared” in suffixes following *’āi, while at the same time solving in a principled manner many of the individual irregularities they trace in the suffixes.¹⁰⁸ Furthermore, our solution here provides theoretical motivation for the differences in realization of *H, about which they lamented “daß kein lautphysiologischer Grund zu ermitteln ist, weshalb

¹⁰⁶ A. Nevins and I. Chitoran, “Phonological Representations,” p. 1987.

¹⁰⁷ According to F. M. Cross and D. N. Freedman, *Early Hebrew Orthography*, p. 15.

¹⁰⁸ H. Bauer and P. Leander, *Historische Grammatik*, p. 225 §25l–v.

**h* in **-áihū* ... in anderer Weise behandelt werden sollte als in **-áihā* und **-áihumu*.”¹⁰⁹

All that remains for us to explain is the presence of <-Y-> and the *ā*-vowel in the typical 3.m.sg. suffix on plural nouns (**šānōtêw* > *šānōtā*[y]w).

5.4. Stage 3: Glide Insertion

This final relevant stage of development in the linguistic system underlying the *consonantal* text of the Hebrew Bible is the linchpin of our argument. Here, we refer back to the tradition of phonetic and phonological analysis that recognizes the heuristic nature of traditional phonological representation. Most phonological analyses assume an inherently schematic view of phonemes as isolated from one another, occurring in easily-divisible units, with periods of static acoustic effects separated by immediate transitions. This heuristic view of phonology remains theoretically powerful and useful in reconstructing what goes on in speakers' minds. However, phonology is not equipped to capture the physical systems of phonetic production and acoustic perception, in which transitions in articulation are not immediate; gestural *trajectories*, rather than periods of featural stasis, characterize phonemes; and gestures overlap with one another rather than proceeding in serial fashion.¹¹⁰ For this task, we transition here to a specifically gesture-based phonetic framework.

¹⁰⁹ H. Bauer and P. Leander, *Historische Grammatik*, p. 225 §25*m*. Our ellipsis here deliberately elides the form **-áihumō* (= our **-aI-Humō*, surfacing as *-émō*), with which we have not dealt. Again, this form conforms to our generalization concerning falling sonority across the **H* (|e| > |u|, although one might need to posit an intermediate step in which the **u* had already begun to undergo reduction to *ə* in advance of the final long vowel *ō*. But we are presently unable to account for the syllabification using our linking rules proposed here.

¹¹⁰ C. P. Browman and L. Goldstein, “Towards an Articulatory Phonology”; idem, “Articulatory Gestures.”

We propose that after the debuccalization of $*s^1$ and the subsequent syllabification that facilitated the deletion of $*H$, the resulting phonetic sequence [-e:w] (< /-ēw/) underwent glide insertion and phonological reanalysis. Our account follows Gick's account of articulatory gestures, which renders a reasonable account of glide insertion at the level of articulation and perception in a linguistic population over time.¹¹¹ This phonetic account, in which gestural overlap from two adjacent, highly-sonorant segments causes the intrusion of a glide-type phone, intersects with and provides physiological motivation for the (cognitive) phonological account.

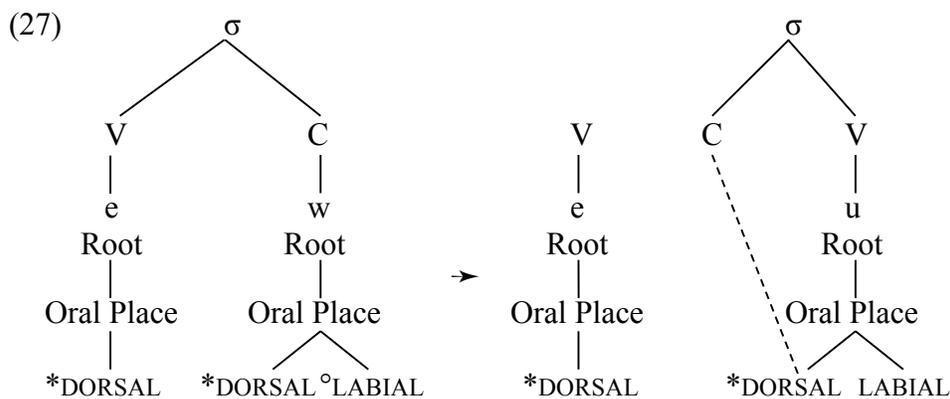
At the end of the preceding stage, we were left with the sequence /-ēw/, which would have been realized as [-e:w]. When transitioning from [e] to [w], the transitional trajectory of the tongue body (dorsum) is upward and rearward, while at the same time the lips narrow to form the labial point of constriction. These gestures exhibit separate trajectories, but when timed simultaneously, yield a smooth transition from the DORSAL [ø back, ø high, ø low] vowel [e] to the combined LABIAL [round] and DORSAL [back, high, ø low] semi-vowel [w], which, we have seen, is featurally and perceptually very similar to the LABIAL [round] and DORSAL [round, back, high, ø low] vowel [u]. If, however, the respective timings or durations of these two gestures were to be delinked, the perceptual cues would become ambiguous. Chitoran has mustered Romanian data to demonstrate that “in hiatus sequences [i.e., sequences of two vowels] the relative timing between gestures is more variable and less tightly controlled than in diphthongs.”¹¹² Because of the greater variability in hiatus sequences of the type [i.V], “the V gesture is

¹¹¹ B. Gick, “Gesture-Based Account”; and idem, “Articulatory Correlates of Ambisyllabicity.”

¹¹² I. Chitoran, “Inter-Gestural Timing,” p. 30.

thus allowed to have an early or a late onset relative to the [i] gesture. If it starts early, it results in a shorter or absent [i] steady state, and a shorter vocalic portion overall.”¹¹³

Drawing from Chitoran’s data and the underlying theoretical matrices of Browman and Goldstein and Gick, we suggest that the timing of the constituent gestures of the semi-vowel [w] became delinked from one another, with the raising of the dorsum occurring slightly before the closure of the lips. In this scenario, the [w], which normally relies on the labial closure gesture (i.e., the action of one of its two designated articulators) for its perceptual salience, reverts to a [-cons] segment again, and a new C slot is rendered necessary to alleviate the hiatus of [e:u:]:

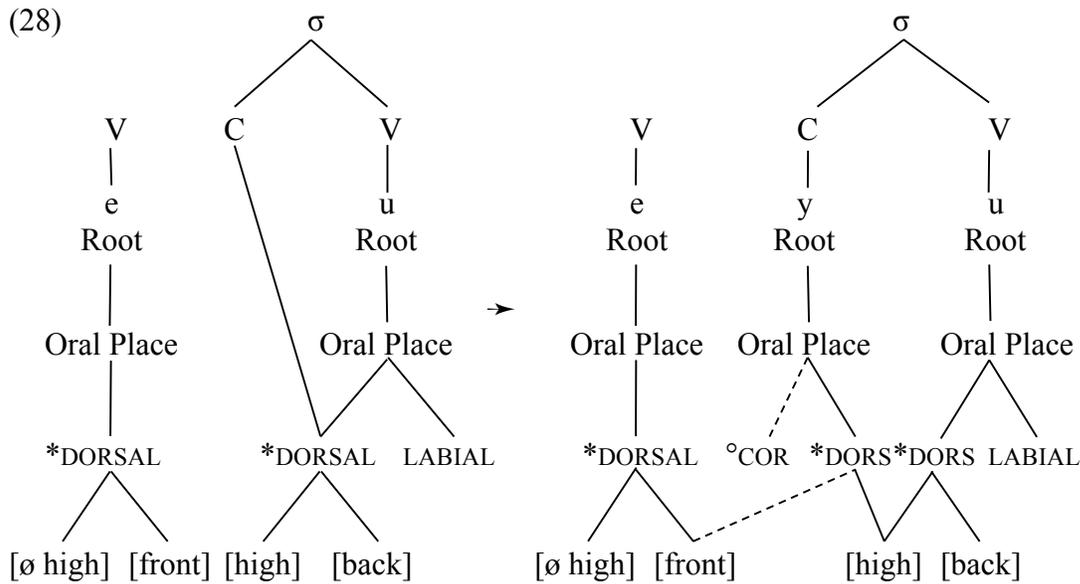


It is likely that the upward movement of the dorsum does not occur in isolation. As Browman and Goldstein point out, the anatomical connection of the tongue blade and the tongue body means that various actions of the two cannot be entirely separated: “one portion of the tongue cannot move completely independently of the other portions.”¹¹⁴ In

¹¹³ I. Chitoran, “Inter-Gestural Timing,” p. 30.

¹¹⁴ C. P. Browman and L. Goldstein, “Articulatory Gestures as Phonological Units,” p. 225.

short, the dorsum drags with it the tongue blade, potentially introducing a perceptual cue to auditors suggesting the addition of a CORONAL feature, as in (28):



The metrical insertion of a C-slot to alleviate the [e:u:] hiatus occasions a slightly more constricted aperture, characteristic of a [+cons] segment, articulated as a DORSAL and CORONAL segment (that is, as a palatal). The acoustic effects of this metrically-based concern may be heightened by deliberate overshooting of the targeted [∅ cons] degree of constriction needed to achieve the phone [u].¹¹⁵ In short, then, the transition of tongue body state between the [∅ high, ∅ low, ∅ back] vowel [e] and the [high, ∅ low, back] vowel [u], dissociated from the accompanying labial closure gesture of [u], produced an

¹¹⁵ D. C. Hall (“Phonological Contrast and Its Phonetic Enhancement: Dispersedness without Dispersion,” *Phonology* 28 [2011]: 1–54) stresses the importance of phonetic enhancement along phonologically contrastive dimensions in order to more fully distinguish segments; we assume here that phonetic enhancement of the features [consonantal, vocalic] can also be used to differentiate segments along the metrical dimension.

incipient consonantal segment [y] alleviating the [e:.u:] hiatus. The phonetic output, [-e:.yu:], was phonologized as /-ēyū/.

This development, called glide insertion, is found cross-linguistically in several languages. For example, the insertion of [y] to alleviate cases of hiatus [i.V], in which the first vowel is [high, ø back], occurs in languages as diverse as colloquial Slovak, the Bizcayan dialect of Basque, and Malay.¹¹⁶ In the Canaanite dialects, Huehnergard has shown that the Standard Phoenician 3.m.sg. suffix <-Y> developed ubiquitously on words ending in high or mid-range vowels (including /-ē/), and he has already connected this process both with the Ethiopic realization of the negative particle /'i-/ + 1.c.sg. prefix-form /'aqtala/ as /'iyaqtala/ and with the Hebrew 3.m.sg. suffix we are examining here.¹¹⁷ Our analysis thus provides further confirmation and deeper phonological explanation of Huehnergard's proposed process of "palatization" in both Hebrew and Phoenician.¹¹⁸

The orthography <-YW> appears strikingly late in the epigraphic and manuscript tradition. As Cryer points out, the longer orthography with *yod* does not seem to have been known at the time of the writing of the Lachish letters (early 6th c. B.C.E.), but it was familiar to the Samaritan Hebrew tradition, "roughly in the 4th–3rd century ... even if it had not fully established itself in their tradition."¹¹⁹ If the common dating of the Ketef

¹¹⁶ For Slovak, see J. Rubach, "Glide and Glottal Stop Insertion in Slavic Languages: A DOT Analysis," *Linguistic Inquiry* 31 (2000): 284–287. For Bizcayan, see M. Kenstowicz, *Phonology in Generative Grammar*, p. 23. For Malay, see J. Durand, "On the Phonological Status of Glides," pp. 94–96.

¹¹⁷ J. Huehnergard, "Development of the Third Person Suffixes," pp. 186–187 n. 9.

¹¹⁸ See also H. Gzella ("Phoenician," p. 61), who similarly uses the term "palatalization" for Phoenician, but, surprisingly, does not do the same for Hebrew (idem, "Ancient Hebrew," pp. 87–88).

¹¹⁹ F. H. Cryer, "Hebrew 3rd Masc. Sg. Suffix," p. 211.

Hinnom silver scrolls in the 7th–6th centuries B.C.E. holds,¹²⁰ this may provide evidence for the beginnings of the glide insertion and corresponding resyllabification we have proposed here.

5.5. Summary of Consonantal Development in Epigraphic and Biblical Hebrew

In orthographic terms, this proposal explains the varying orthographic realizations of the Biblical Hebrew 3.m.sg. suffix on plural nouns as an accurate surface realization of the phonological development from **-al-Hũ* > /-ēw/ > /-ēyū/:

(29) Summary of Consonantal Development in Varieties of Classical Hebrew:

| | Phonological /Phonetic Input | Rule(s) Applied | Phonological Representation | Phonetic Representation | Orthographic Realization |
|---------|------------------------------|-----------------|-----------------------------|-------------------------|--------------------------|
| ABH: | <i>*-al-Hũ</i> > | – | */-ay-hū/ | [-ayhu:]/[-e:hu:]? | <-YHW> |
| EpigHeb | <i>*-al-Hũ</i> > | (24) | */-ēw/ | [-e:w] | <-W> |
| BibHeb | [-e:w] > | (27–28) | */-e:yū/ | [-e:yu:] | <-YW> |

5.5. Explanation of ā-Vowel in Masoretic Vocalization

Our solution bolsters the prior theories of many Hebraists with theoretical phonologically- and phonetically-motivated argumentation and cross-linguistic parallels. This stands in contrast to theories that would consider the *yod* of this suffix merely as an orthographic indicator of plurality completely unrepresentative of the underlying phonology.¹²¹ But what, then, of the Masoretic vowel *qames* in the BH 3.m.sg. suffix, pronounced [-a:w]? Most prior interpreters have tried to fit the consonantal orthography together with the Masoretic system of vocalization. W. Gesenius, for example, explained

¹²⁰ E.g., A. Yardeni, “Remarks on the Priestly Blessing,” pp. 176–185.

¹²¹ E.g., F. H. Cryer, “Hebrew 3rd Masc. Sg. Suffix”; F. M. Cross, “Some Problems in Old Hebrew Orthography.”

the /-ā-/ as the lengthening of underlying short **a* after first **h* and then **y* had syncopated.¹²² J. Blau also traces the surface realization /-ā-/ as deriving unilinearly from the underlying */-a-/.¹²³ Even closer to our solution is the development proposed by W. Richter, namely, that “-aw hat später –ēw weitestgehend verdrängt.”¹²⁴ R. Meyer is even clearer in his assessment: “Beide Suffixformen sind genuin hebr. und stehen ursprünglich als Dialektformen nebeneinander.”¹²⁵ We suggest that Meyer here has correctly intuited the alternative phonological rule represented ubiquitously in the BH 3.m.sg. suffix on plural nouns. We reconstruct this dialectal development as an alternative rule to our (7), above. There, we proposed a rule in which the number-gender morpheme of the plural, **aI*, was linked to a single V-slot. In this alternate grammatical rule, the suffix undergoes a different contraction, in which the *a*-vowel is linked to a single V-slot, but the **I* is not (30a), or in which the *a*-vowel is allowed to spread to a second segmental position (an X-slot, see 30b) that was already permitted in the skeletal structure of the morpheme, but which did not permit linkage to a high vocoid. Correspondently, the segment **U* was eventually selected as the coda of the syllable, as in (24), above:

¹²² GKC §91i.

¹²³ J. Blau, *Grammar of Biblical Hebrew*, p. 24 §7.2.1.5.1.

¹²⁴ The quote here has been reproduced from F. H. Cryer (“Hebrew 3rd Masc. Sg. Suffix,” p. 206). Cryer has incorrectly given the name of the book (*Einführung in das biblische Hebräisch I*, which is the title of H. Irsigler’s introduction); we can find no such volume published by Richter. But the quotation given by Cryer is clearly drawn from W. Richter (*Grundlagen einer althebräischen Grammatik*, vol. I [St. Ottilien: EOS Verlag, 1978], where Richter’s enigmatic abbreviation “ePP [enklitisches Personal Prenom]” is used. The page cited by Cryer (p. 63) is incorrect, and we have been unable to track down the proper citation. For statements approaching that attributed here to Richter, see previously W. Schneider, *Grammatik des biblischen Hebräisch*, p. 66 §17.2.3 n. 3.

¹²⁵ R. Meyer, *Hebräische Grammatik* (Berlin: de Gruyter, 1992), pp. 176–177 (= 2:56–57).

(30) Alternative Association of **aI* with the Skeletal Tier:

(a)

| | | | | | | |
|----|---|---|---|-----|---|---------------------------------------|
| -C | + | V | + | C | → | */-áw/ > (with tonic lengthening) -áw |
| | | | | - - | | |
| -C | + | á | I | + | H | U |

(b)

| | | | | | | | |
|----|---|---|---|---|-----|---|--------|
| -C | + | V | X | + | C | → | */-áw/ |
| | | | / | | - - | | |
| -C | + | á | I | + | H | U | |

Cryer himself pointed to this solution as “the only conceivable phonological argument against [his] position” in a footnote, citing G. A. Rendsburg’s work on “Monophthongization of *aw/ay* > *ā* in Eblaite and in Northwest Semitic.”¹²⁶ In this scenario, Cryer allowed, the *yod* could have been retained “as an historical spelling.”¹²⁷ But Cryer dismissed this solution, arguing that “as Rendsburg himself is well aware, the reduction of *ay* and *aw* to *ā* is a relatively marginal phenomenon in NW semitic. Moreover, it would be difficult to explain why this reduction was known to the scribes of Biblical Hebrew but not to those responsible for the extra-Biblical Hebrew Inscriptions.”¹²⁸ Cryer errs here on two counts: First, his evaluation of Rendsburg’s analysis incorrectly understands Rendsburg as arguing for a “marginal phenomenon.” Rendsburg indeed argues that this phenomenon took place at the *margins* of urbanized civilization—that is, he recognizes this dialectal feature as largely associated with and preserved in rural areas.¹²⁹ But Rendsburg also demonstrates the wide geographical

¹²⁶ F. H. Cryer, “Hebrew 3rd Masc. Sg. Suffix,” p. 209 n. 30; G. A. Rendsburg, “Monophthongization of *aw/ay* > *ā* in Eblaite and in Northwest Semitic,” in *Eblaitica: Essays on the Ebla Archives and Eblaite Language*, vol. 2 (ed. C. H. Gordon and G. A. Rendsburg; Winona Lake, Ind.: Eisenbrauns, 1990), pp. 91–126. Insofar as Rendsburg assumes **aw/ay* > *ā*, it closely approximates our (30b), in which the *a*-vowel is spread to two skeletal tier slots (VX or VV).

¹²⁷ F. H. Cryer, “Hebrew 3rd Masc. Sg. Suffix,” p. 209 n. 30.

¹²⁸ F. H. Cryer, “Hebrew 3rd Masc. Sg. Suffix,” pp. 209–210 n. 30.

¹²⁹ G. A. Rendsburg, “Monophthongization of *aw/ay*,” pp. 102–103.

spread of this particular sound change and its long chronological attestation, tracing the shift as early as third-century Eblaite. According to Rendsburg, the shift can also be found in second-century Amorite (at Mari); some regions in the hinterlands of Ugarit; and one of the Amarna letters from the southern Levantine hinterlands. The shift is also evidenced in several first-century Aramaic dialects, as both Rendsburg and W. R. Garr have shown,¹³⁰ and even occurs in scattered colloquial Arabic dialects of the modern period. Rendsburg's survey suggests that "the shift *aw/ay* > *ā* in the Semitic family of languages was native to northern Syria," and can still be found in the colloquial Levantine Arabic along the Syrian-Lebanese border.¹³¹ A particular emphasis of Rendsburg's argument is that the shift is traceable to the northern ("Israelian") dialect of Hebrew. Cryer's characterization of the shift as "marginal" is itself thus rhetorical sleight-of-hand.

Second, Cryer's dismissal of this solution misses the fact that the contraction of **ay* > *ā* preserved in the Masoretic vocalic tradition is not necessarily the direct genealogical descendant of the tradition that produced the consonantal text. He is right, therefore, to dismiss the possibility that *y* was a "historical spelling," since, as we have shown above, the orthographic representation of the *yod* does not *preserve* the historical phonology of the m.pl. construct affix **-al*. Instead, we have argued, the *yod* is introduced at a relatively late stage to mark the phonetically-motivated introduction of a palatal glide emerging from the unlicensed [e:.u:] hiatus. Equally problematic is Cryer's insistence that "it would be difficult to explain why this reduction was known to the scribes of Biblical Hebrew but not to those responsible for the extra-Biblical Hebrew

¹³⁰ W. R. Garr, "**ay* > *a* in Targum Onqelos," *JAOS* 111 (1991): 712–719.

¹³¹ G. A. Rendsburg, "Monophthongization of *aw/ay*," p. 102.

Inscriptions.”¹³² What Cryer forgets here is that the majority of the EH evidence, spelled only with <-W>, would *permit* analysis of the underlying development as the contraction of historical **ay > ā* in the same way that we have presented in (30).

6. CONCLUSION

We conclude by conceding that our analysis does not propose an entirely new schema by which to explain the development of the 3.m.sg. suffix on plural nouns in Classical Hebrew. Various scholars have hit on different facets of the problem, and our approach here is at best a synthesis and technical refinement of the most perceptive solutions suggested to date. Our synthesis offers the following:

- (1) Philological explanation of the various forms of the suffix (i.e., <-YHW>, <-W>, and <-YW>) obtaining across the extant Canaanite dialects from the first millennium B.C.E., and particularly in the Hebrew dialect-bundle.
- (2) Formal explanation of and cross-linguistic parallels for the insertion of a phonologically present glide -y- and its graphic representation in the orthography of the Biblical Hebrew 3.m.sg. suffix on plural nouns.
- (3) a gesture towards a socio-linguistic explanation for the apparent disjuncture between the consonantal structure of the 3.m.sg. prevalently represented in the MT and the vocalic tradition superimposed on the consonantal text. We suggest adding this suffix to Rendsburg’s list of evident cases in which **ay > ā* in the northern dialect of Hebrew. In his terminology, we suggest that the 3.m.sg. suffix

¹³² F. H. Cryer, “Hebrew 3rd Masc. Sg. Suffix,” p. 210 n. 30.

-āw “originate[s] in a Hebrew regional dialect which did contract the diphthong to ā, after which time the [suffix] spread to other Hebrew-speaking areas.”¹³³

It should come as little surprise that the Masoretic vocalization tradition preserved in Tiberias, which exhibits morphologically-constrained monophthongization of *ay > ā found its home in the Galilee, where the Jewish Palestinian Aramaic dialect recorded in Targum Jonathon demonstrates the same contraction.¹³⁴ Our analysis bolsters the identification of the consonantal *yod* in the Biblical Hebrew 3.m.sg. suffix on plural nouns as an authentic indicator of a complicated but traceable historical development, in which two different dialects of Hebrew, each exhibiting its own unilinear development, are represented in the conflate text of the MT.

¹³³ G. A. Rendsburg, “Monophthongization of *aw/ay*,” p. 112.

¹³⁴ G. A. Rendsburg, “Monophthongization of *aw/ay*,” pp. 99–100; see already G. Dalman, *Grammatik des jüdisch-palästinischen Aramäisch* (2nd ed. Leipzig: Hinrichs, 1905), p. 91 §14.7f–g.