TIBERIAN HEBREW STRESS RETRACTION
AND THE TWO RULES OF CONTEXTUALIZATION

1. Introduction

1.1. At the heart of Tiberian Hebrew (TH) phonology is the vexing problem of the 2MSG of the PAST CONSECUTIVE (MODAL COORDINATION: DeCaen 1995) and specifically its shifting of main word stress to the word edge [vɔʔɔːmɔːrɔː] → [vɔʔɔːmɑːrɔː] ‘and you will say’. This stress shifting bears directly on lexical representation, derivations and rule-ordering (or instead the CONSTRAINT HIERARCHY), PAUSAL PHONOLOGY (Revell 2015) and CONTEXTUALIZATION, STRESS RETRACTION (Revell 1987, 2015: ch. 5) and EXTERNAL GEMINATION (Revell 1988, 1989). There is even the specter of the Duke of York.

1.2. However, the problem is not limited to the 2MSG consecutive. It applies to the 1sg as well, but curiously not to the 1pl. Thus, there is the stress-shifting counterpart [vɔʔɔːmɔːrɪː] → [vɔʔɔːmɑːrɪː] ‘and I will say’ but not [vɔʔɔːmɔːrɪː] → [vɔʔɔːmɑːrɪː] ‘and we will say’.

1.3. Conventionally, these optimizing forms are considered NON-PAUSAL or CONTEXTUAL, contrasting with MAJOR PAUSAL [vɔʔɔːmɔːrɔː] and MINOR PAUSAL [vɔʔɔːmɑːrɔː]. This threefold contrast is TYPE 7 (T7) in the analysis of Goerwitz (1993: 45-47). T7 includes the 2MSG independent pronoun [ʔɔːttɔː] ~ [ʔɪːttɔː] ~ [ʔɔːttɔː] (DeCaen 2005) and [ʔɔːttɔː] ‘now’ by attraction.4

1.4. The 1sg independent pronoun [ʔɔːːnɔːχɪː] ~ [ʔɔːːnɔːχɪː] is drawn into this orbit (Goerwitz 1993: 48). What it shares is the invariance of the vocalization in contrast to the basic CONTEXTUALIZATION rule of TYPE 1 (T1), as will be explained. It will be shown that the 1sg variant [ʔɔːːnɪː] ~ [ʔanɪː], apparently T1, belongs among the first and second person forms of Type 7, probably by attraction.

Curiously, the 1pl independent pronoun [ʔanːʊnuː] ~ [ʔanːʊnuː] remains in TYPE 3 (T3). Again, stress is attracted to [iː] and [ɔː] but not for some reason to [uː].5

1.5. Goerwitz (1993) notes that the T7 variation is harder to pin down than T1: there is more apparent free variation than pause generally, and the distribution is more sensitive to prosodic and accentual structures. Accordingly, he suggests that T7 represents a second contextualization rule that is fairly close to the surface, in other words, relatively late in the derivation (p. 49).

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1 Acknowledgements …
2 Tiberian Hebrew transcription follows Khan (2020). Non-contrastive secondary articulations are omitted, and all TH accents are marked by the acute accent.
3 PAUSE2 and PAUSE1 respectively in the terminology of Goerwitz (1993).
4 The study of [ʔɔːːttɔː] is left for further study.
5 No doubt a function of marked [+high, +back]. Otherwise, the phonological distinction would arbitrarily depend on a syntactic contrast.
1.6. What Goerwitz does not say is that the T7 contextual forms ought to feed the rule of stress retraction (rhythm rule), which to be fair is not his remit. However, in no case is any stress clash with T7 relieved. Further, the minor pausal form with penultimate stress is considered somehow the output of stress retraction: a complex Duke of York scenario. But if stress clash is typically not alleviated, then what is the motivation for this limited stress retraction?

1.7. I pursue the notion here that Goerwitz is correct: there are in fact two distinct rules of contextualization, one early (Type 1 or C1), one late (Type 7 or C7), that optimize different prosodic structures. Crucially, the fundamental TH rule of stress retraction is rule-ordered between the two contextualization rules. Consequently, the reason why T7 contextual forms systematically and egregiously violate the rhythm rule is that their stress shifting occurs after stress retraction has applied.

1.8. These notes are arranged as follows. In §2, the proposed rules of contextualization, C1 and C7, are formulated. The simple behaviour of the pronouns is summarized in §3 in preparation for the examination of the verbal forms in §4. Appendices §§A.1-A.4 provide an exhaustive summary of the datasets.

2. Two Rules of Contextualization

2.1. C1. The exposition in this section is based on Table 1. Rules are ordered in column 1. The pausal form ‘she said’ is derived in column 2 and the contextual in 3. Finally, the complex dance of the Sandhi rules is summarized in column 4 ‘she said to him’.

<table>
<thead>
<tr>
<th>LEXICAL</th>
<th>?ם 모르+ט</th>
<th>?ם 모르+ט # לו:</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRETTONIC</td>
<td>?ם 모르</td>
<td>?ם 모르</td>
</tr>
<tr>
<td>PAUSE LENGTH</td>
<td>?ם 모르:ר</td>
<td>?ם 모르:ר</td>
</tr>
<tr>
<td>C1</td>
<td>?ם 모르</td>
<td>?ם 모르</td>
</tr>
<tr>
<td>RETRACTION</td>
<td>?ם 모르</td>
<td>?ם 모르</td>
</tr>
<tr>
<td>GEMINATION</td>
<td>?ם 모르</td>
<td>?ם 모르</td>
</tr>
<tr>
<td>SURFACE LENGTH</td>
<td>?ם 모르:ר</td>
<td>?ם 모르:ר</td>
</tr>
</tbody>
</table>

2.1.2. The conditioning environment of TH pause remains opaque three reasons. First, relatively few words have pausal variants. Second, the bounding domain of pause is not indicated by TH diacritics; it must be inferred. Finally, there is no explanation of the two degrees of pause: major and minor.

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6 The traditional term nesigah (Hebrew ‘retraction’) properly refers to the retraction of an overt TH conjunctive accent. The term stress retraction here is meant to cover all forms of retraction or outright elimination of word stress to alleviate a stress clash.

7 My belief is that the two TH accent systems, and the poetic accent system in particular, are designed for poetry in general and specifically for the tetrameter of the book of Job and the bulk
2.1.3. C1 optimizes prosodic structure with increased TEMPO (Dresher 1994: §6.1). It both removes main word stress from the short vowel /ɔ/ (SYNCOPATION) and aligns the main word stress with the right edge of the word. Crucially, C1 does not move the word stress away from a long vowel, e.g., /qɔːm+ɔ/ ‘she stood up’.

2.1.4. There is a Duke of York quality to the ping-pong of stress assignment under the sandhi rules of stress retraction and external gemination.

2.1.4.1. Briefly, stress retraction applies in the TH quantity-sensitive system \((\mu)\bar{\mu}\#\mu \rightarrow (\mu)\tilde{\mu}\#\tilde{\mu}\) between words immediately phrased together.

2.1.4.2. External gemination applies wherever an unstressed final lax vowel /ɛ, ɔ/ runs up against the main stress of the PHONOLOGICAL WORD \((\omega)\). Note that gemination does not apply in the case of lexical long /ɔː/. Crucially, stress retraction feeds external gemination.

2.2. C7. The exposition in this section is based on Table 2. Columns 2-4 show the major pausal, minor pausal, and contextual derivations of the 2MSG independent pronoun ‘thou’ (DeCaen 2005). On this view, the minor pausal form surfaces if neither lengthening nor contextualization have applied. The surface adjustments of lowering and lengthening are not ordered.

| Table 2 |
|------------------|------------------|------------------|
| **LEXICAL**      | ?átta *anta      | ?átta # zê \(^8\) |
| **PRETONIC**     |                  |                  |
| **PAUSE LENGTH** | ?átta            |                  |
| **C1**           |                  |                  |
| **RETRACTION**   |                  | ?átta           |
| **C7**           |                  | ?átta zê        |
| **GEMINATION**   |                  |                  |
| **LOWERING**     | ?átta:          | ?átta:          |
| **SURFACE LENGTH** | ?átta:        | ?átta:          |

2.2.1. The pausal form in column 2 is of little interest. Once pausal lengthening applies, the long /ɔː/ is immune to stress movement and lowering, here and elsewhere: faithful to stress assignment in pause.

2.2.2. The claim embodied in Table 2 is that the minor pausal form is not pausal per se. Rather, C7 has simply failed to apply. This claim would turn table on the problem: the conditioning of C7 and not of minor pause becomes the long-term research question.

The advantage would be that there is no mysterious prosodic domain for a distinct minor pause. The only bounding domain required between the verse and PHONOLOGICAL PHRASE is the INTONATIONAL PHRASE (Dresher 1994, DeCaen & Dresher 2020).

of Psalms and Proverbs. If that is the case, then the end of the poetic line almost invariably coincides with pause. Marking the ends of poetic lines is redundant.

\(^8\) (?átta: zê:) (baní: Še:sôːv) ‘Art thou my very son Esau?’ (Gen 27:24)
2.2.3. Crucially, C1 does not apply: a short tonic vowel /∀/ is not a problem. Neither does stress retraction apply. Thus, the striking stress clash in column 5 remains unresolved.

2.3. Verbal forms

2.3.1. Table 3 provides the baseline of the regular past tense (Type 6 or T6). The pausal alternation is derived in columns 2-3. The simple clitic /vɔ#/ ’and’ is added for comparison with Table 4, and column 4 shows sandhi gemination with /ló:/ ‘to him’.

<table>
<thead>
<tr>
<th>TABLE 3</th>
<th>LEXICAL</th>
<th>vɔ # ?ɔmɔrτɔ</th>
<th>vɔ # ?ɔmɔrτɔ # lό:</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRETONIC</td>
<td>vɔ # ?ɔ:mɔrτɔ</td>
<td>vɔ # ?ɔ:mɔrτɔ</td>
<td>vɔʔɔ:mɔrτɔ lό:</td>
</tr>
<tr>
<td>PAUSE LENGTH</td>
<td>vɔ # ?ɔ:mɔrτɔ</td>
<td>vɔ # ?ɔ:mɔrτɔ</td>
<td>vοʔɔ:mɔrτɔ lό:</td>
</tr>
<tr>
<td>C1</td>
<td>vοʔɔ:mɔrτɔ lό:</td>
<td>vοʔɔ:mɔrτɔ lό:</td>
<td></td>
</tr>
<tr>
<td>RETRACTION</td>
<td>vοʔɔ:mɔrτɔ lό:</td>
<td>vοʔɔ:mɔrτɔ lό:</td>
<td></td>
</tr>
<tr>
<td>GEMINATION</td>
<td>vοʔɔ:mɔrτɔ lό:</td>
<td>vοʔɔ:mɔrτɔ lό:</td>
<td></td>
</tr>
<tr>
<td>LOWERING</td>
<td>vοʔɔ:mɔrτɔ lό:</td>
<td>vοʔɔ:mɔrτɔ lό:</td>
<td></td>
</tr>
<tr>
<td>SURFACE LENGTH</td>
<td>vοʔɔ:mɔːrτɔ</td>
<td>vοʔɔ:mɔːrτɔ</td>
<td>vοʔɔ:má:ɔrτɔ lό:</td>
</tr>
</tbody>
</table>

2.3.2. Again, the major pausal form with [ɔː] is immune to subsequent rules. The non-pausal form is subject only to lowering and lengthening. C1 does not apply to closed /CVC/ (T6). Penultimate stress triggers external gemination [l] → [ll] in column 4. The emphasis here is on the clitic status of the conjunction highlighted by ‘#’ throughout. Crucially, C7 does not apply to the simple past tense.

2.3.3. The focus of Table 4 is the interaction of C7 and external gemination. If C7 fails to apply, then external gemination must apply. Such phrasing cannot occur with the major pausal form.

<table>
<thead>
<tr>
<th>TABLE 4</th>
<th>LEXICAL</th>
<th>vɔ + ?ɔmɔrτɔ # lό:</th>
<th>vɔ + ?ɔmɔrτɔ # lό:</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRETONIC</td>
<td>vɔʔɔ:mɔrτɔ lό:</td>
<td>vοʔɔ:mɔrτɔ lό:</td>
<td></td>
</tr>
<tr>
<td>PAUSE LENGTH</td>
<td>vοʔɔ:mɔrτɔ lό:</td>
<td>vοʔɔ:mɔrτɔ lό:</td>
<td></td>
</tr>
<tr>
<td>C1</td>
<td>vοʔɔ:mɔrτɔ lό:</td>
<td>vοʔɔ:mɔrτɔ lό:</td>
<td></td>
</tr>
<tr>
<td>RETRACTION</td>
<td>vοʔɔ:mɔrτɔ lό:</td>
<td>vοʔɔ:mɔrτο lό:</td>
<td></td>
</tr>
<tr>
<td>C7</td>
<td>vοʔɔ:mɔrτο lό:</td>
<td>vοʔɔ:mɔrτο lό:</td>
<td></td>
</tr>
<tr>
<td>GEMINATION</td>
<td>vοʔɔ:mɔrτο lό:</td>
<td>vοʔɔ:mɔrτο lό:</td>
<td></td>
</tr>
<tr>
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<td></td>
</tr>
<tr>
<td>SURFACE LENGTH</td>
<td>vοʔɔ:mɔːrτο lό:</td>
<td>vοʔɔ:mɔːrτο lό:</td>
<td></td>
</tr>
</tbody>
</table>

9 Technically [-back] /vɔ/ vs. [+back] /vɔ/. See vowel phonemicization in DeCaen & Isardi (1999) and Dresher & DeCaen (some day soon).
2.3.4. The original proposal here is that the conjunction is *inflectional* in the consecutive construction, contrasting ‘+’ with ‘#’. Syntactically, it merges &+C (DeCaen 1995).\(^{10}\) C7 applies in the derived environment.

2.3.5. The contrasts might be attributable to the metrical footing, at least historically. Compare in this light the output of C7 \([\texttt{(vɔʔː)(mɔɾ遒)})\] with the input \([\texttt{vɔʔːmɔɾ遒tɔ)}\], where the parentheses indicate the footing. On this view, optimization applies differently to \([\texttt{vɔ#)}\] where \([\texttt{vɔ#)}\] spells out the simple syntactic head &. Presumably, given a choice between closed heavy /mɔɾ/ and open light /tɔ/ (the target of C1), the preference is weight for stress assignment.\(^{11}\) Technically, the latter is \([\texttt{vɔ# pro # ((ʔɔːmɔɾ)tɔ)}\] in the null-pronoun system (Cowper & DeCaen 2017).

3. Pronouns

3.1. The anomalous failure to relieve the stress clash is more glaring in the case of the 19 tokens of the second person pronoun (§A.1).

3.1.1. Cliticization here should be discounted as the output of a *late musical* transformation, not the incorporation into a phonological word (ο) or clitic group.

3.1.2. If the approach in §2.3.5 be correct, then the final vowel of the pronoun might be lexically long /ʔɔːtɔː/. The preference would then be for an open heavy /tɔː/ over closed heavy /ʔɔt/ for stress assignment. This length proposal is also consistent with the long final vowel in all other pronouns, including 2MPL /ʔɔːtɛːm/ and 2FPL /ʔɔːtɛːn/.

3.2. The 5 tokens of stress clash with the longer first person pronoun (§A.2) pass under the radar. Note how the footing of the pronoun \([((ʔɔnôː)kiː) → [((ʔː)(noːkǐː)]\] is consistent with the approach suggested in §2.3.5.

3.3. The shorter first person pronoun enters into an overt stress clash 9 times (§A.3). In terms of optimization, stress is correctly removed from light /ʔɔː//: ʔɔːniː/ → ʔɔːniː/, cf. C1 (§2.1). Minimal pairs demonstrate that the cliticization is musical not phonological; cf. §3.1.1.

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\(^{10}\) Similarly, inflectional /vɔX/ of the realis consecutive is the grammaticalized combination of *vɔ ‘and’ plus complementizer /X/ ‘then’, where X is a radically underspecified consonant (DeCaen 1995). Syntactically, this is the fusion of &+C.

\(^{11}\) No doubt, the relevant constraint is related to the elimination of stress on light /ɔ/ in C1.
4. Consecutive Verb Forms

4.1. An exhaustive listing of the consecutive verbal forms is supplied in §A.4. The only difference between first person and second person consecutive verb forms is that the latter with /ɔ#/ induces external gemination just in case C7 fails to apply with two exceptions.12

4.2. As Goerwitz notes, even when all his conditions are met, “the stress does not always move to the ultima. Whether it does or not depends on even more complex constraints involving the stress contour of the following word [and phrase], on the constituent structure of the clause, and on the clause and/or word’s connection to subsequent material” (1993: 48).

4.3. It is beyond the scope of this study to sort out the fine details of syntactic and prosodic conditioning to the extent that the limited database allows. There seem to be too many minimal pairs. It is difficult to find the signal in the noise. For example, is the failure of C7 before [ʔɛː:] ‘fire’ 15/16 times13 significant? Perhaps because of the glottal stop? But then see exceptional [ʔɛːːses] ‘land’ in Ezek 32:6.

4.4. There seems no doubt that tonic [iː] and [ɔː] resist stress movement vs. [úː] (§A.4.1) as well as tense [ɛː:] and [ɔːː]. There is no instance of such final-weak verbs with ultimate stress.14 It is probably no coincidence that these are the same vowels singled out by C7 in the first place (§1.4).

4.5. One conclusion is inescapable: pausal phonology plays the decisive role. First, C7 fails before a word bearing the major disjunctive accents silluq D0 (§A.4.2.1) and athnach D0f (§A.4.2.2). Second, pausal forms appear when C7 fails, whereas contextual forms appear when C7 applies with two exceptions (lɔː:χ Deut 7:25, Ezek 16:60). It is not clear how to treat the three hybrids in §A.4.1.3.

4.6. There are two not incompatible ways to think of this pause conditioning.

4.6.1. First, there must be a domain larger than the TH accentual phrase, but not much larger, to account for the lesser pausal phenomena (Revell 2015: P4 pause and W pause; DGM x).15 There is no reason to avoid the connection with the lesser pausal phenomenon here.

4.6.2. There is also the notion of the PAUSAL PHRASE floated in the treatment of Tiberian Aramaic vocalization (DeCaen 2004). In (1), the accentual phrase P merges a conjunctive accent C with a

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12 On odd coincidence in Deuteronomy: [wuvɔː: fɔː:mmɔː:]0 (Deut 12:5; cf. 1S 22:5 [mp 6x, mm 2057]) and [viɔːːsɔː: fɔː:mmɔː:]1f (Deut 23:13). See §A.4.1.5.
13 The exception is Jer 27:27. The three cases with maqqeph are considered underlying stress clashes resulting from C7.
14 doublecheck: true of hayah and asah.
15 Alternatively, the domain is the phonological phrase, but there is some adjustment to satisfy the laws of accentuation. Then again, there may be motivation here to consider a distinction between the phonological phrase and, say, the CLITIC GROUP.
disjunctive accent D. If the head word W2 is in pause, so too is W1 to some lesser degree. Thus, C7 fails to apply to a verb W1 in the pausal phrase.\(^{16}\)

(1) \[\begin{array}{c}
\text{P} \\
\text{C} \\
\text{D} \\
\text{W1} \\
\text{W2}
\end{array}\]

4.7. The paradigmatic contrast is between pausal [ʔɔ́niː] and non-pausal [ʔaníː]. Crucially, both are capable of triggering stress retraction.\(^{17}\)

4.7.1. \(\text{Ex hypothesi,} \quad [\text{valɔːqáːhtiː}] \quad \text{‘and I will take’ in (2) is pausal to a minor degree in a pausal phrase headed by [ʔɔ́niː]. Therefore, C7 fails. Elsewhere, C7 applies in (3) and (4). On this view, an application of some pausal rule (or faithfulness constraint) freezes the lexical stress assignment and bleeds C7. Where faithfulness reigns, external gemination will apply.}\)

(2) \((\text{valɔːqáːhtiː} \: ?\ddot{o}niː)_{2f} (\text{ʔɛθɛːʔɛːʔɛz})_{2f} [\text{ʔɔːʔɛːmɔː}]_{1f}\)
   ‘I will also take of the highest branch of the high cedar’ (Ezek 17:22)

(3) \((\text{vaːhaqιːmoːʔθié} \: ?\ddot{aníː})_{2f} (\text{ʔɛθbarkiːʔθiː})_{1f} (\text{ʔɪttːɣ})_{0f}\)
   ‘And I will establish my covenant with thee’ (Ezek 16:62; cf. Lev 26:32)

(4) \((\text{vaːhafιːmoːʔθi} \: ?\ddot{aníː})_{1f} (\text{ʔɛθɔːʔɛːʔɛs})_{0f}\)
   ‘And I will bring the land into desolation’ (Lev 26:32)

4.7.2. There does seem to be a correlation between pause on the one hand and the length and recursion of phrasing on the other. In (2), the pausal pronoun is in the outer band of major revia D2. Perhaps it is no coincidence that C7 conspicuously fails 5/7 times with revia (§A.4.2.3). In (3) and (4) in contrast, there is a rush over the pronoun to a focus on the direct objects.

4.7.3. Compare in this respect the token in (2) with the failures of C7 in (5) and (6) involving major zageph D1. The expectation is that such phrasing is the major determinate of the lesser pause. Note that external gemination has applied in (5) [b] \(\rightarrow\) [bb] that bleeds SPIRANTIZATION [b] \(\rightarrow\) [v].

(5) \((\text{vehɛːhɛzɑːqtoːb bɔːː}):(\text{ʔɛθr vaθoːʔɔːv})_{2f} (\text{ʔɛːháːj})_{1f} [\text{ʔɛθmɔːɣ}]_{0}\)
   ‘then thou shalt relieve him: yea, though he be a stranger, or a sojourner; that he may live with thee’ (Lev 25:35)

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\(^{16}\) Alternatively, a pausal W2 somehow \textit{blocks} C7.

\(^{17}\) Assumed metrical grids (DGM I):

\[
\begin{array}{cccccccc}
\text{x} & \text{x} & \text{o} & \text{x} & \text{x} \\
\text{x} & \text{x} & \text{o} & \text{x} & \text{x} \\
\text{ʔɔː} & \text{niː} & \text{ʔa} & \text{niː}
\end{array}
\]
4.7.4. Note further that in (5) there is also a pausal version of the conjunction [vɔ́:] ‘and’ vs. schwa [va] (\textit{WP}ause in Revell 2015: ch. 6). The suggestion, then, is that this lesser degree of pause is spread wider than imagined. Can we perhaps speak of a \textit{disjunction phrase} with reference to the accentuation: a phrase just a little larger than the TH accentual phrase?

4.8. It must be emphasized that we are dealing with a \textit{lesser} degree of pause. This point is driven home by the form of the segholates in the dataset. For example, the form [ʔɛ́:ɾɛs'] ‘land’ surfacing in Ezek 32:6 contrasts with the major pausal [ʔɔ́:ɾɔs'\slash ʔ] from /ʔɔ́:ɾɔs'/. The same is true of [nɛ́:feʃ] (Exod 21:23), [dɛ́:vɛɾ] (Lev 26:25), [pɛ́:sah] (Deut 16:2), [rɛ́:χɛv] (Zech 9:10), and [fɛ́:ɾɛs'] (Mal 2:3). The word [mɛ́:χɛs] (Num 31:28) is ambiguous with respect to pause\textsuperscript{18} though consistent with the others. The segholate [mɛ́:lɛχ] (1K 11:37) is invariant.\textsuperscript{19}

4.9. There are two exceptions of concern.

4.9.1. The paradigmatic contrast between pausal [ʔɔ́:ni:] and non-pausal [ʔanːi:] (§4.7) is replicated by the $2\textit{MSG}$ forms [lɔ́:χɛ] ~ [lɛϊːːχɛ] and [bɔ́:χɛ] ~ [bɛʃ:χɛ] (n. 17). Consider first the contrast in (7) vs. (8).

(7) (pɔːnáːj \textit{je:leː;χu}:\textit{1f} (va:haniː:hɔː:θi: \textit{lɔ́:χɛ})\textit{0})

‘My presence shall go with thee, and I will give thee rest’ (Exod 33:14)

(8) (vaːʃɔː:faɾt5: \textit{læʃː}:\textit{2} (\textit{ʃɛː;va})\textit{2f} \textit{ʃɛːbɑːθːθ;ʃɔː:niː:m})\textit{1}

‘And thou shalt number seven sabbaths of years unto thee’ (Lev 25:8)

4.9.2. There is no doubt that there is major pause in (7). It is the verse-final \textit{silhuq} D0 that dominates the phrase and triggers pausal [lɔ́:χɛ]. Further, pausal \textit{je:leː;χu::} ‘shall go’ vs. \textit{jeːlɛː;χu::} (T1) coincides with the right edge of an independent clause.

In contrast, focus in (8) speeds past pronominal [lɛːχɛ] to the direct object just as in (3) and (4). A way to think of this recurring syntactic structure is that the monosyllabic pronouns, e.g., [bɔ́ː], [lɔ́ː], etc. are \textit{phrasal enclitics} attracted by the finite verb.

\textsuperscript{18} There is no contrastive \textit{mɔ́ːχɛs} attested for comparison. However, there is the feminine \textit{mιχɛs::} which suggests the underlying vowel is [-back]: either \textit{e\slash} (as in \textit{eʃɛdq}) or \textit{a\slash} (as in \textit{bɔ́ːgəd}). On the eightfold phonemicization of the TH vowels, see DeCaen $\&$ Idsardi (1999).

\textsuperscript{19} /máːlək\slash .
4.9.3. *Ex hypothesi*, there are only two exceptions presented in (9) and (10). These will be registered in the *generative masora parva*: two times $lɔ́:\;Χ$.

(9) \( \text{val}:\text{qaḥt}: lɔ́:\;χ \) \(_1\) \( [\text{pè:n}]_2\{ [\text{tivvɔːqé}:f\;bó:]_3\} \)

‘nor take it unto thee, lest thou be snared therein’ \( \text{(Deut 7:25)} \)

(10) \( \text{va}:\text{haqiːm}: lɔ́:\;χ \) \(_1\) \( \) \( [\text{baːr}:\theta \;\xi:oː\;lɔ́:\;m]_0\)

‘and I will establish unto thee an everlasting covenant’ \( \text{(Ezek 16:60)} \)

4.9.3.1. In (9), the pausal $[lɔ́:\;χ]$ might be expected given the pause induced by the subordinate clause. It is not clear. But in that case, the phrase ought to be $[\text{val}:\text{qáː}\;\text{ħt}:lɔ́:\;χ]$ with penultimate stress (C7 fails) and external gemination. Consequently, the verbal form appears to be a lapse.

4.9.3.2. The inverse is true in (10). The ultimate stress of the verb is expected (C7 applies) as in (3), (4) and (8). In that case, the contextual form $[\text{la}χ:\;:]$ ought to surface. Thus, the pronominal form appears to be a lapse.

4.10. The more interesting problem is the hybrid behaviour of $\pi\nu\;\nu$ stems (§A.4.1) and $\pi\nu\;\gamma$ stems (§A.4.1.5). Stress shifting in the consecutive forms seems impossible in the Tiberian reading tradition: both /i:/ and /ʁ:/ attract stress. Nevertheless, the accompanying pausal form should vary independently. Thus, pausal $[vɔːχ]$ \(2\times\text{Ezek 5:9, 5:10}\) and non-pausal $[lɔχ:]$ \(4\times\text{Deut 10:1, 1S 22:5, 1K 11:38, Jer 13:1}\) are both consistent with the invariant penultimate stress.

However, since there is penultimate stress throughout the paradigms, external gemination must apply in all cases.\(^{21}\) Accordingly, it seems reasonable to refer to the phenomenon in general and the three tokens in §A.4.1.3 in particular as hybrid.

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\(^{20}\) There is an apparent stress clash here that ought to be resolved $\rightarrow [\text{tivvɔːqé}:f\;bó:]$. However, since $[\text{tivvɔːqé}:f]$ is a *Long Word*, the underlying phrasing here is $[(\text{tivvɔːqé}:f)\; (bó:)]$. There is no stress clash here since the words are not immediately phrased together. Further, the specific musical phrase *munach zaqeph* is disproportionately associated with failures of stress retraction.

\(^{21}\) Two exceptions (n. 12).
5. Summary

5.1. Stress shifting in TH pausal phonology is triggered by a tonic light syllable /CV/ but not by the heavy syllables /CVC/ and /CVV/: syncopation or contextualization. This is Type 1 pause in the scheme of Goerwitz (1993), hence the abbreviation of the contextualization rule ‘C1’.

5.2. However, there is another type of stress shifting restricted to the 1SG and 2MSG consecutive verb forms and to the 1SG and 2MSG independent pronouns. This is Type 7. In this second case, the problem is not a /CV/ syllable to be syncopated. Rather, main stress appears attracted to the final /i/ and /ɔ/ respectively. Curiously, final /ɑ/ of the 1PL does not participate in the stress shifting of consecutive and pronoun. This second contextualization rule is abbreviated here ‘C7’.

5.3. There is no obvious phonological conditioning of Type 7 stress shifting vs. Type 6 (the simple past tense). One idea floated is the improved metrical grid of the output of C7. A related idea is the constraint ALIGN(STRESS, WORD).

5.4. A promising idea contrasts the lexical representations of Type 6 and Type 7. On this view, the fundamental difference is the GRAMMATICALIZATION of the conjunction *vV ˈand’ in the consecutive forms. Whereas with Type 6 the conjunction is the simple clitic /vɔ#/ ‘and’, with Type 7 /vɔ+ ‘and then’ is an inflectional prefix (fusing &+C), hence providing the derived environment for C7 to apply.

5.5. Regardless, the stress shifting of C7 creates the environment for stress retraction. However, the resulting stress clash is in no case alleviated. This contrasts strikingly with C1 in which the resulting stress clash is alleviated by stress retraction in Duke of York fashion.

5.6. The solution to this puzzle proposed here, already suggested by Goerwitz (1993), is rule ordering: C1 > retraction > C7. As Goerwitz notes, in contrast to C1, C7 seems closer to the surface, hence later in the derivation (pp. 48f).

5.7. However, since the resulting stress clash created by C7 need not be relieved, there is the pressing question of why C7 does not apply in some cases. In such cases, it was observed that there is a strong correlation with pausal accents and pausal forms. Accordingly, the proposal here is that there is some sort of TH pausal phrase, however it should be understood (DeCaen 2004).

5.8. Ex hypothesi, C7 fails within a pausal phrase because lexical stress assignment is frozen by pause. Both blocking and bleeding interpretations seems possible. Perhaps there is another pausal rule somehow fixing the stress assignment. Nevertheless, when C7 fails, external gemination must apply in the case of 2MSG /ɔ#/.

5.9. The added twist is that C7 never applies when tonic /i:/ or /ɔ:/ is present in the verbal input (precisely the vowels that attract C7 stress in the first place). However, words phrased together with these verb forms may still vary independently with respect to pausal form. Regardless, since in all these cases final /ɔ#/ remains post-tonic, external gemination must apply. This is referred to here as hybrid behaviour.
A.1. ?attività

[ʔafɛr- | ?attivitàmonʃɔːm]of (Gen 13:14)

[attivitàmerháːstɔː]pash Jon 4:10

[ʔim- | ?attivitàmerlú:]ff Gen 23:13
[gam- | ?attivitàmunʃaθɛː]ff Gen 24:44
[há:?attivitàmerzɛː]levir Gen 27:21;
mer/tip 2S 2:20,
1K 18:7,
18:17
~ [attivitàmerzɛː]ff Gen 27:24
[attivitàmervɔː]ff Deut 9:5;
[attivitàmunvɔː]l 2S 11:10,
Ezek 38:13
[attivitàmerRɔːsɔː]l 2S 18:22
[attivitàmunqɔːsɔː]l Isa 7:16
[attivitàmunmɛːθ]l Jer 28:16
[vaattivitàmunhúː]l Jer 49:12
[vaattivitàmunlíː]l Jer 51:20
[vaattivitàmahʃaχáːv]pash Ezek 4:4
[attivitàmahʃaχáːv]pash Ezek 4:4

19x

criticized

[attivitàhúːmah | hóːʔeloːhíːm]pasha 2K 19:15 = Isa 37:16 ~ ()ff ()of 1C 17:26

[attivitàhúː]pasha 2S 7:28, Neh 9:7; mun = virtual leg Ps 44:5
[vaattivitàhúː]ath/D1 Ps 102:28

not phrased together

[ʕaseːattivitàmun | lɔːnuː]l Judg 10:15
[ʔafɛːrumunattivitàmunʃɔːm]l 1S 19:3

clitic

A.2. ʔanó:χi:

[ʔanó:χi::munach vó:]zarqa (Exod 3:13)
[kí::munach [ʔanó:χi::merekam mé:θ]pashta (Deut 4:22)
[vihinné:azla [ʔanó:χi::merekavó:]zarqa (Judg 7:17)
[ʔanó:χi::azla [ʔanó:χi::merekahú:]zarqa (Isa 43:25)
[kí::munach [ʔanó:χi::merekahé:]pashta (Isa 46:9)

5x

A.3. ʔ5:ni:

[ló:mmɔzmah zé:] [ʔaní: s̄̃ːm]1 2S 12:23
[kí::ʔaní: hú:]1 (Isa 43:10
= 43:12
= 46:4)
[va::ʔaní: ló:]1 (Song 2:16)
[ʔaní: ʔaní:][2f (Isa 48:12);
azla/mahpak Hos 5:14: as for me, it is I that …
azla/geresh [vaːam-ʔaní: hé:] (Ezek 16:43)

9x

problem musical clitic
but [ʔaní::hú:]0 (Isa 41:4), pashta 48:12
[vá::ʔaní::hé:]0 (Isa 43:12, cf. 45:22)
[ʔaní::azla hé::mahpak faddá:j]pashta (Gen 35:11)
but [ʔaní::hé::munach faddá:j]zaqeph (Gen 17:1)
[ʔ5::no: [ʔaní::vó:]0 (Gen 37:30)

but virtual geresh
[kí::munach ʔaní::mun | ʔaní:]pashta [hú:] (Deut 32:39)

other cases not phrased together:
A.4. Consecutive Verbal Forms

A.4.1. פ"ם Stems

A.4.1.1. Pausal
[וֹסֹסָה:שָׁלָמְו יִ֜כָּחַד] (Ezek 5:9) bak
[וֹסֹסָה:שָׁלָמְו יִ֜כָּחַד] pashta (Ezek 5:10)

A.4.1.2. Gemination
[וֹסֹסָה:שָׁלָמְו יִ֜כָּחַד] (Exod 25:26, Num 21:34, Deut 3:2, Judg 9:33, 1S 24:5)
[וֹסֹסָה:שָׁלָמְו יִ֜כָּחַד] (Deut 16:1)
[וֹסֹסָה:שָׁלָמְו יִ֜כָּחַד] (Exod 28:36)
[וֹסֹסָה:שָׁלָמְו יִ֜כָּחַד] (Num 10:31, Judg 11:6)
[וֹסֹסָה:שָׁלָמְו יִ֜כָּחַד] (2S 10:11, 1C 19:12)
[וֹסֹסָה:שָׁלָמְו יִ֜כָּחַד] (1K 11:37)
[וֹסֹסָה:שָׁלָמְו יִ֜כָּחַד] (Exod 25:24, 30:3)
[וֹסֹסָה:שָׁלָמְו יִ֜כָּחַד] (Exod 27:4, Judg 6:17)
[וֹסֹסָה:שָׁלָמְו יִ֜כָּחַד] (Deut 27:5)
[וֹסֹסָה:שָׁלָמְו יִ֜כָּחַד] (Josh 1:8)
[וֹסֹסָה:שָׁלָמְו יִ֜כָּחַד] (Josh 11:8)
[וֹסֹסָה:שָׁלָמְו יִ֜כָּחַד] (Ezek 9:4)
[וֹסֹסָה:שָׁלָמְו יִ֜כָּחַד] (Gen 40:14)
[וֹסֹסָה:שָׁלָמְו יִ֜כָּחַד] (Exod 25:25)

A.4.1.3. Contextual
[וֹסֹסָה:שָׁלָמְו יִ֜כָּחַד] (Deut 10:1) lex
[וֹסֹסָה:שָׁלָמְו יִ֜כָּחַד] (Jer 13:1) lex
[וֹסֹסָה:שָׁלָמְו יִ֜כָּחַד] (1K 11:38) lex

A.4.1.4. Indeterminate
[וֹסֹסָה:שָׁלָמְו יִ֜כָּחַד] (1S 19:3)
[וֹסֹסָה:שָׁלָמְו יִ֜כָּחַד] (1S 2:35)
[וֹסֹסָה:שָׁלָמְו יִ֜כָּחַד] (Ezek 25:17)
[וֹסֹסָה:שָׁלָמְו יִ֜כָּחַד] (Mal 2:3)

A.4.1.5. Cf. פ"ם Stems
[וֹסֹסָה:שָׁלָמְו יִ֜כָּחַד] (Jer 7:2, 19:2)
[וֹסֹסָה:שָׁלָמְו יִ֜כָּחַד] (1S 22:5) lex
A.4.2. Pausal

A.4.2.1. SILLUQ
[vjɔːʃːɔːvtɔb bɔːh]₀ (Deut 26:1)
[vaːibbːɔːtɔtɔːv]₀ (1K 22:13)

[vaːhaːniːhːɔːʔiː ɮːɔːχ]₀ (Exod 33:14) *pausal lax
[viːhɡːɡːɔːʔiː ɮːɔːχ]₀ (1S 19:3) *pausal lax
[vaːniːqːdːfiː vɔːh]₀ (Ezek 28:22)

A.4.2.2. ATHNACH
[vjɔːʃːɔːvtɔb bɔːh]₀ (Deut 17:14)
[voːɔːʃːɔːliːʃʃɔːʃ]₀ (Deut 27:7)

[viːhɡːɡːɔːʔiː ɮːɔːχ]₀ (Num 23:3) *pausal lax

A.4.2.3. REVIA
[vjɔːʃːɔːʔaːqɔːlɔː]:lɔː]₂ (Exod 25:12)
[voːɔːʃːɔːliːʃʃɔːʃ]₂ (Deut 14:26)
[voːɔːʃːɔːmːɔːrtɔːlɔː]:lɔː]₂ (Ezek 28:12)

[vafɔːmːaːtːɔː lʔːɔː]:r]₂ (Ezek 27:3)

[viːhissːaːttiː ʔɛːjː]₂ (Jer 43:12) esh
[vaːloːqːaːhtː ʔɔːniː]₂ (Ezek 17:22) *pausal ani

ADD
(8) (vaːʃːɔːfːartːɔː lʔːɔː]:r]₂ (Lev 25:8) lexa
ZAQEPH
[vehɛ:hezɑ:qtɔb ɔb:]l [long...]0 (Lev 25:35)
[vænillɑ:htɪ: vɔ:m]l [long...]0f (Jer 24:10)
[væniqdɑ:ftɪ: vɔ:m]l [PP]0 (Ezek 39:27)

X
[valɔ:qahtɔ: lɔ:]l (Deut 7:25)  minor pause!  lax! hypercorrection D1
[vohɔ:øaːtː lɔ:]l (1S 10:8)  lexa
[vaːhaːfːvɔː: lɔ:]l (2S 9:7)  lexa
[vaːhɔːattː lɔ:]l (1K 11:31)  lexa
[vaːniппasːtː baxɔ:]l (4x Jer 51:21,1, 51:21,5, 51:22, 51:23) bexa x4

X
[vɔʔɔ:maːtː 1a-ko:x]l (Ezek 38:14)
[vasaːmtː fɔdːʊθ]l (Exod 8:19)

[voʔɔːfaːtː lɔ:]l (Exod 29:5)
[vasaːmtː ñ3ːm]l (Exod 40:3)
[valɔ:qahtɔ: sɔːleθ]l (Lev 24:5)
[vohɔːqaːtː vɔːh]l (Deut 21:11)
[vohɔːfaːtː vɔːh]l (Deut 23:14)
[vaːniппaːmtː vɔː:]l (1S 15:18)
[wumɔːjaːtː li:]l (1S 16:3)
[vehɛ:faːtː lɪ:]l (2Sam 15:34)
[voʔɔːnaːtː vɔːm]l (1K 8:46, 2C 6:36)
[vaːdibbaːtː ñ3ːm]l (Jer 22:1)
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<td><em>vanɔ:θātti:</em></td>
<td>sh (Ezek 30:14)</td>
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<td><em>vafillā:hti:</em></td>
<td>sh (5x Amos 1:4, 1:7, 1:10, 1:12, 2:5)</td>
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<td><em>bexa</em> (2x Jer 51:22, 51:23)</td>
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<td><em>va:haqi:mo:θì:</em></td>
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<td><em>vanɔ:θattì:</em></td>
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<td><em>ʃɔ:mmɔ:</em> (Exod 29:43)</td>
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<td><em>vanɔ:θattì:</em></td>
<td><em>s'avì:</em> (Ezek 26:20)</td>
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</table>
PASHTA D2f

[vihiss\'áːttiːmah ðéːf] pashta (3x Jer 21:14, 50:32, Amos 1:14)  
[vanːəːttíːmah ðéːf] pashta (Ezek 30:16)  

[vaʃilláːhtíːmah ðéːver] pashta (Lev 26:25)  
[veheːvéːtiːmah móːřɛ] pashta (Lev 26:36)  
[wunqallóːtiːmah йóːð] pashta (2S 6:22)  
[vanːəːttíːmah hóːřɛ] pashta (Ezek 32:8)

X

[vaːhaqːmoːtíːmah laʃɔːː] pashta (Deut 27:2)  
[wuveːreːtíːmah laʃɔːː] pashta (Josh 17:15)  

[veheːveːtíːmer jɔːmmɔːː] pashta (Exod 26:33)  
[wumilleːtíːmer vɔːː] pashta (Exod 28:17)  
[vaʔɔːːhavtíːmer lɔːː] pashta (Lev 19:34)

X

[vasamtíːmah laʃɔːː] pashta (Exod 21:13)  
[vanːəːattíːmah laʃɔːː] pashta (Isa 45:3, Zech 3:7)  
[vanippasːtítíːmah baʃɔːː] i (3x Jer 51:20, 51:22, 51:23)  

[vaːhaqːmoːtíːmer ʃíː] pashta (1S 2:35)
TEVIR D2f

[va:ht:mr pê:sa] [Deut 16:2]
[va:ð:mr f:j:m] [Deut 28:36]

[va:mo:µi:mr l:ö:] [Deut 27:2]
[va:tti:mr l:ö:] [Josh 15:16, Judg 1:12]

X
[va:qht:mr l:x:] [Ezek 5:1] lexa
[vaniss:avt:mr { l:} ] [Exod 34:2]

X

ZARQA D2f


DECHI D2f

PAZER D3

GREAT TELISHA D3
[va:tt:mun l:x:] [Gen 17:8] lexa

GERESH D3f

[va:ð:azla f:j:m] [Deut 28:64]

[va:mo:µ:azla { µ:χes} [Num 31:28]
AZLA/MAHPAK = virtual d3f

[vanɔ:θɑ:ttì:azla lɔː:mah  |  ðeθ-karɔ:mɛːhɔ:]pashta (Hos 2:17)  

[vanɔ:θɑ:ttì:azla lɔː:mah  |  ðeθ-naffaxɔ:]pashta (Jer 45:4)

AZLA/DARGA = virtual d3f

[vihiʃqe:θiːazla ðɛːresdarga  |  sɔːfɔːθɛɔ:]tevir (Ezek 32:6)

DARGA/MUNACH

[vihiʃɔːttì:dar ðɛːʃmʊn  |  biʃɔːrɛːhɔ:]2 (Jer 17:27)

MUNACH/MUNACH

[vɔʃɔːvāːdtɔlmʊn  lɔːmʊn  |  ðɛθ-hɔːʔədɔːmː];pəzer (2Sam 9:10)

MAQQEPH/NONPAUSAL

[vihiʃlaẖti:-vɔːh  |  rɔːʃɔːv]1 (Ezek 14:13)

[vaʃillahṭi:-ðɛːʃ  |  bamoːkɔːʁ]1 (Ezek 28:23)

[vaʃillahṭi:-ðɛːʃ  |  bɔɔʁɔːv]1 (Hos 8:14)

[vaʃillahṭi:-ðɛːʃ  |  bamoːʃɔːv]1 (Amos 2:2)

[vaʃillahṭi:-lɔːmër  |  sɔːʃf:m]1 (Jer 48:12)

[vihiʃtattì:-ʁɛːχɛʃmʊn  |  meːʔɛfrájim]2 (Zech 9:10)

[vaʃillahṭi:-vɔːh]garshayim (Ezek 28:23)


