Tiberian Hebrew finite verbal morphology
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Following McGinnis (1995), who uses a Distributed Morphology (DM) approach (Halle & Marantz 1993; 1994) within a Minimalist syntactic framework (Chomsky 1995), I analyze the distribution of morphological elements referring to phi-features in Tiberian Hebrew finite verbs in terms of feature checking. In the Imperfect and related verb forms, phi-features are marked by prefixes and suffixes; in some cases the same feature is marked by both types of affix on the same form. In contrast, the phi-features associated with all other inflected forms are marked by suffixes alone. I assume that features associated with inflectional suffixes are checked in the syntax and do not require word-internal checking, but the features associated with the Imperfect must be checked in both the syntactic and morphological components. This additional round of checking results in a structure where a copy of the phi-features is merged/adjointed with V, thus producing two sets of phi-features, one to either side of V, both of which may be spelled out. The close structural association of the adjoined Imperfect phi-features with V also accounts for the observation that the Imperfect inflectional prefixes are the only phi-referring morphological elements incorporated into TH stems.

This paper presents an analysis of certain aspects of the finite verbal morphology of Tiberian Hebrew (TH), the language reflected in the Hebrew Bible. Finite verbs in TH agree with their subjects for [person], [number], and [gender]. In terms of purely morphological criteria, two classes can be identified. In the suffixed conjugations, Perfect and Waw-Perfect, agreement features are marked only by suffixes. In the prefixed conjugations, Imperfect and Waw-Imperfect, phi-features are marked by both prefixes and suffixes. Three related questions will be dealt with in the present paper. First, why do the prefixed conjugations bear phi-referring prefixes, while all other phi-referring elements in TH, including those associated with the suffixed conjugations, are realized as suffixes? (§2) However, the prefixed conjugations also have inflectional suffixes and, in some cases, both prefix and suffix refer to the same phi-features, as discussed in §3.2. The morphology of TH finite verbs thus presents a second question: Why are phi-features marked twice on the same word? The third question is closely related to the first two, and, as will be shown, can be answered within the same analysis: Why are phi-referring prefixes included in stem-formation, while all other phi-referring affixes attach to a fully-formed stem?

The paper is organized as follows. §1 presents the relevant data. In §2, a discussion of the phonological evidence for the inclusion of inflectional prefixes into verbal stems is presented. §3 begins with a discussion of the theoretical framework.
adopted in the present paper, Distributed Morphology (Halle & Marantz 1993;1994) as placed within a Minimalist (Chomsky 1995) syntactic framework by McGinnis (1995). The rest of this section presents a structural analysis of the finite verbal morphology of TH. In §4, I present historical evidence for the special status of the prefixed conjugations, and introduce the Minimalist notion of feature strength to support the structural account offered in §4. The paper concludes with §5.

1. The data

As noted above, the prefixed conjugations in TH have both prefixal and suffixed phi-referring affixes. These are identical in both the Imperfect and Waw-Imperfect. The full paradigm of the Qal Imperfect is given in (1) below:

1. Qal Imperfect - root /ktb/ - ‘will write’
   a. yi-xto:v 3sg, masc  f. yi-xtvu: 3pl, masc
   b. ti-xto:v 3sg, fem  g. ti-xto:vma: 3pl, fem
   c. ti-xto:v 2sg, masc  h. ti-xv-em: 2pl, masc
   d. ti-xtv-i: 2sg, fem  i. ti-xto:vma: 2pl, fem
   e. te-ixo:v 1sg  j. ni-xto:v 1pl

The prefixed conjugations are the only lexical classes in TH in which phi-features are marked by prefixes, although derivational prefixes are common. Both sets of inflectional affixes reference the same set of phi-features, as discussed in §3.2.

The other finite verbal conjugations, the Perfect and Waw-Perfect, have only phi-referring suffixes. As with the prefixed conjugations, the inflectional suffixes are identical in both suffixed conjugations. The full paradigm of the Qal Perfect is given in (2) below:

2. Qal Perfect - root /ktb/ - ‘wrote’
   a. ka:qv 3sg, masc  e. ka:qvu: 3pl
   b. ka:qa: 3sg, fem  f. kqtem: 2pl, masc
   c. ka:qv-qa: 2sg, masc  g. kqtem: 2pl, fem
   d. ka:qv-t: 2sg, fem  h. ka:qv-nu: 1pl
   e. ka:qv-t: 1sg

Most nouns, prepositions, and non-finite verbs may also have associated phi-referring elements, again attached only to the right side of the word:

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1. There are seven main verbal classes in TH: Qal, Niphal, Piel, Pual, Hiphil, Hophal, and Hithpael. Unless otherwise noted, all examples of verbs in the present paper are from the Qal verbal class, as other classes have derivational prefixes associated with them which interact heavily with the purely inflectional prefixes we wish to concentrate on here. Standard example forms are cited.
3. Examples of \( \text{phi} \)-referring suffixes

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<td>(3)ms</td>
<td>ko:Qe:v</td>
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<td>koQv-o:</td>
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<td>‘write!’</td>
<td>‘... writing’</td>
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<td>(3)fs</td>
<td>koQv-a:</td>
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<td>l-a:</td>
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<td>(3)mp</td>
<td>koQv-i:m</td>
<td>ko:Qv-u:</td>
<td>ko:Qv-a:m</td>
<td>su:ss-a:m</td>
<td>la:-hem</td>
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2. Phonological evidence

In this section, I present phonological evidence that the inflectional prefixes associated with the Imperfect bear a closer relationship to the verb than inflectional suffixes in TH. §2.1 presents a discussion of syllable structure and stem formation constraints in TH, followed by a description of the phonological process of spirantization in §2.2. In §2.3, I show that the inflectional prefixes of the prefixed conjugations are included in those elements that make up the verbal stem, while all other inflectional affixes are attached to a fully-formed stem. The section concludes with a summary and a brief discussion of previous approaches to the question in §2.4.

2.1 Syllable Structure Constraints and Stem Formation

The simplest form of stem-formation in TH is one in which a vocalic melody is intercalated with a consonantal root. For example, the root \( \text{ktb} \) can be combined with the vowel melody /a/ to form the Qal Perfect verb stem /katab/, with /a/ spreading to fill both available vowel slots in accordance with syllable structure constraints. The syllable structure constraints associated with stem formation are strict; only CV, CV:, and CVC syllables are allowed. Another constraint on stem-formation demands the least possible number of syllables; therefore, /katba/ is preferred to /*katba/, which has three open syllables rather than one open and one closed. As well, stems normally end with a consonant; /katab/ is thus preferred to /*katba/, although both satisfy the syllable structure constraints. While TH allows some relaxation of these constraints in derived syllable rhymes/codas, the restriction against C-clusters in onsets is virtually absolute. Equally, empty onsets are also barred.

2.2 Spirantization

The non-emphatic stops /p,b,t,d,k,g/ are spirantized when they follow a vowel; i.e. \( p>\text{f} \), \( b>v \), etc. This process is pervasive, applying within and across syllables, and across words in phonological phrases. All such stops that follow a vowel are spirantized, regardless of whether or not the underlying vowel appears in output.
forms. For example, in the Qal Perfect, spirantization may be triggered by a vowel that does not appear in output forms:\(^2\)

4. a. /katab/ \(\text{[ka:Qav]}\) 'he wrote'
b. /katab+a/ \(\text{[ka:Qva:]}\) 'she wrote'
c. /katab+u/ \(\text{[ka:Qvu:]}\) 'they wrote'

In (4.b) and (4.c) above, the second vowel of the stem /katab/ does not appear in the output forms. However, the stop that follows this vowel, /b/, is spirantized, thus indicating that this vowel must be present in the stem associated with these forms as well as the non-suffixed form in (4.a).

Spirantization can thus be used to determine the nature and extent of what will be called here the stem; that element which forms the core of the word in TH, to which all other prefixes and suffixes are added. For example, in (4.c) above, it is clear that this form must be composed of a stem /katab/ to which the inflectional suffix /-u:/ has been affixed. If the inflectional suffix were included in the intercalation of consonantal root and vowel melody that creates a Qal Perfect stem, an output form like \(*\text{ka:Qbu:}\), where the third consonant, [b], of the root is not spirantized, could be expected to appear in output form. This form includes all necessary information, and satisfies the constraints mentioned above. The first vowel of this form would represent the Qal Perfect vowel melody /a/. The vowel melody would not spread to fill more than one vowel position, as the suffix /-u:/ can be syllabified with /b/ to satisfy the syllable structure constraints. Alternately, an output form \(*\text{ka:Quv}\) could also be produced. In this form, the first vowel would again represent the Qal Perfect vowel melody, and the second vowel would represent the inflectional affix /u/, here realized as an infix. This form would again satisfy all of the constraints mentioned above, and also follow the generalization that stems end in a consonant.

2.3 Prefixes and stem formation

Most prefixes in TH are derivational, and they are generally included in stem-formation. For example, the nominal derivational prefix /mV-/ attached to a triradical root like gdl ‘strong’ with a vowel melody /o/ forms a mVCCoC stem:

5. \[\text{mi\tilde{d}ol}\] ‘tower’

Note that the second root consonant, [d], of this form is not spirantized. This may be compared to \(*\text{mi\tilde{d}ol}\), which is the form expected if /mV-/ had been affixed to the stem /godol/.

Most of the verbal classes in TH also have prefixes associated with them (see note 1). For example, the Niphal Perfect, unlike the Qal Perfect discussed above, has both a prefix /ni-/ and a vowel melody /a/ associated with it:

\(^{2}\) The precise formulation of constraints referring to vowel lengthening, reduction, and deletion do not concern us here, so they will not be discussed.
6. Niphal Perfect
   a. ni-xta:v ‘3ms was written’
   b. ni-xt-an-‘3fs was written’

Note that the second consonant of the root, /t/, is not spirantized in these forms, indicating again that the prefix is included in stem-formation rather than being affixed to a stem: /niktab/, not *ni-katab.

Unlike most prefixes, all suffixes in TH refer to [person], [number], and/or [gender]. As noted above (§1), in almost all verbal paradigms phi-features are restricted to suffixal position. In contrast, the prefixed conjugations bear inflectional prefixes as well as suffixes. In the Imperfect forms in (1) above, the second consonant of the root, /t/, is not spirantized, i.e. 3ms [yi-xt-o:v]. I take this as evidence that the Imperfect inflectional prefixes, like the derivational prefixes, nominal /mV-/ and verbal Niphal Perfect /ni-/ discussed above, are included in stem formation.

However, the inflectional suffixes associated with the Imperfect appear to be attached to fully-formed stems, like any other suffix. For example, if the 2fs Imperfect form [ti-xt-an]: were a single stem made up of a combination of root, vowel melody, prefix, and suffix, a form like [*ti-xo:jiv] could result. In this form, the inflectional suffix /-i/ is again realized as an infix between the last two root consonants. If, however, /-i/ is attached to a stem /tiktob/, the attested form is produced.

2.4 Summary and previous accounts

In this section, I have argued that the inflectional prefixes associated with the Imperfect and Waw-Consecutive in TH are included in stem formation, while all other phi-referring elements are realized as suffixes affixed to fully-formed stems. This position is based on an examination of the application or non-application of the phonological process of spirantization of non-emphatic stops. This evidence indicates positions that contain a stem-vowel that does not appear in output forms, as well as positions are not occupied by a stem-vowel. This information has been used to identify which morphological elements are included in the stem.

Before leaving the question of which elements are included in stem-formation in TH, a brief discussion of previous accounts of the problem posed by the prefixed conjugation inflectional prefixes is in order. Rappaport (1984), building on work by Prince (1975), proposed that inflectional prefixes are affixed to a fully-formed stem, but that the first stem vowel is deleted before spirantization applies. This approach requires the following order of derivation, using the example of the 3ms Imperfect form [yi-xt:Φ:v]

   stem formation    kotob
   inflectional affixation    yi+kotob
   vowel deletion     yiktob
   spirantization    yiKtoB
                     [yixto:v]
As the first vowel of the stem is deleted before spirantization applies, the second root consonant is not spirantized since the necessary environment, a preceding vowel, has been removed. This use of vowel deletion to account for the failure of spirantization is problematic, however. In all cases where vowel deletion can be shown to have occurred, as in the Qal Perfect examples discussed in §2.2 above, the deleted vowel triggers spirantization of a following non-emphatic stop. The non-application of spirantization of the second root consonant in Imperfect forms thus represents an exceptional rule ordering. Whereas spirantization normally follows vowel deletion, in this one case the ordering must be reversed.

In Balcaen (1995), using a Lexical Phonology approach (Kiparsky 1982), I adopt the position that inflectional prefixes are included in stem formation, thus accounting for the failure of spirantization. However, this approach requires positing a separate and unique module for the prefixed conjugations in the morphological component. In order to account for the inclusion of inflectional material into the stem, while all other phi-referring elements are affixed to fully-formed stems, the creation of prefixed conjugation stems must follow a different path than any other class. While this approach provides an account for the phonological facts, it does not explain why the prefixed conjugations should have this unique status. The following sections, as well as providing an account of the double marking of phi-features on the prefixed conjugations, also provide a morphosyntactic motivation for this morpho-phonological phenomenon.

3. A morphosyntactic analysis of TH verbs

As noted in the introduction, the prefixed conjugations in TH bear elements on both the left and right sides of the word which refer to subsets of the same set of phi-features. In order to account for this, I adopt McGinnis’ (1995) approach to Distributed Morphology (DM) (Halle & Marantz 1993; 1994; hereafter H&M), which she used in her analysis of Ojibwa verbal clauses. This is discussed in §3.1. The section continues with a discussion of the features associated with prefixed conjugation inflectional affixes in §3.2, followed by an account of the representation of the morphosyntax of TH finite verbs in §3.3, which includes a discussion of how the morphosyntactic representation determines which morphological elements are included in the stem.

3.1 Distributed Morphology within a Minimalist framework

McGinnis (1995:167) supplies the following Minimalist (Chomsky 1995) schematic of the model of the grammar she assumes, which includes a morphological component (Morphological Structure - MS ) between the computational component and PF:

8. C ___________________________ LF
   MS
   PF
In the present paper, I assume that the MS can be discussed in terms of both a morphosyntactic and a morpho-phonological interface, while acknowledging that these must interact in various ways.

In H&M’s original formulation of DM, which is not framed in Minimalist terms, the syntax deals only with bundles of semantic and syntactic features, which they call morphemes. The features themselves...

...are drawn from a set made available by Universal Grammar ... The semantic features and properties of terminal nodes [i.e. feature bundles] created at DS will also be drawn from Universal Grammar and perhaps from language-particular semantic categories or concepts.

(H&M 1993:121)

This morphological theory adopts a late insertion approach. Crucially, the syntax, or, in Minimalist terms, the computational system, does not manipulate what are normally seen as lexical entries:

We assume that the Vocabulary of a language plays no role in the creation of terminal nodes at DS. That is, the particular set of universal and/or language particular semantic and syntactic features chosen for a terminal node is not constrained by whether or not that set of features appears in any Vocabulary entry in that language. (H&M 1993:1:121)

The actual realization of the morphemes is accomplished by Vocabulary insertion in the MS, which acts as the intermediary between syntax and phonology.

The language-specific Vocabulary items, which together make up a set which is roughly synonymous with the usual notion of the lexicon, bear phonological features and morphosyntactic/semantic features of their own, along with subcategorization frames, etc. These items compete for insertion into the morphemes manipulated by the computational component. This competition arises primarily, in H&M’s view, from the fact that the syntactic features bundled into the Vocabulary items may or may not be isomorphic with the feature bundles manipulated by the syntax.

Vocabulary items may be underspecified to varying degrees. In a competition between Vocabulary items, that item which is the most highly-specified and does not bear conflicting values for any features which it has in common with the syntactic morpheme is preferred. H&M (1994:275-6) state “Vocabulary insertion (VI) adds phonological features to the terminal nodes, but it does not add to the semantic/syntactic features making up the terminal nodes.” For example, given two Vocabulary items, one of which is marked [+F1,+F2], and the other only [+F1], the first item would win in a competition for insertion onto a morpheme marked [+F1,+F2,+F3], but would lose out to the second item in a competition for insertion onto [+F1,-F2]. However, if a morpheme was marked only for [+F1], the first item would not be chosen, even though it is more highly-specified than the second and its features do not conflict with those of the morpheme, as the morpheme does not reference [F2].

Three processes may adjust the ordering and association of features and feature bundles provided by the syntax to the MS. (H&M 1993:115ff) The following...
discussion frames these processes in terms of Minimalist syntactic representations, but otherwise follows H&M. Merger in the MS, as H&M point out, is essentially the same process as syntactic head-to-head adjunction. One terminal node adjoins to another, producing a complex element that bears the category specification of the target. However, both elements remain independent morphemes with discrete sets of features, which are filled by different sets of Vocabulary Items. In contrast, fusion fuses two nodes under one category node into a single terminal node, with a single set of features. This has the effect of reducing the number of morphemes in a string, thus also reducing the number of Vocabulary items. As H&M note, both morphological merger and syntactic head-to-head adjunction feed fusion, as both create the requisite sister relationship between two terminal nodes. Finally, in H&M’s approach, fission splits a single bundle of features associated with a terminal node. The fissioned feature(s) can then be inserted elsewhere in the representation. Other aspects of the theory do not concern us here.

McGinnis (1995), while basically following H&M, introduces certain modifications in keeping with a Minimalist syntactic framework. The two of interest to the present discussion involve the nature of traces and the role of feature-checking. McGinnis proposes that fission, rather than splitting a feature bundle into discrete sets, can represent a syntactic process within the morphological component. Features can move, but rather than splitting off from their original bundles, the whole bundle moves, leaving behind a copy. Both the moved bundle and the copy can be filled by Vocabulary insertion; the choice of whether both, either, or neither set of features may be filled is presumably language-specific. However, only copies created in the MS can be filled; syntactic traces are invisible in the MS.

McGinnis also introduces the ideas of feature-checking and attraction from syntactic theory into DM in order to provide motivation for morphological fission. H&M handle fission by essentially unmotivated rules, as in the example below:

9. Fission rule (H&M 1993:118)

\[
\text{Cl} + \text{Stem} \rightarrow [+\text{pl}] + \text{Cl} + \text{Stem} \text{ (linear order irrelevant)}
\]

\[
[+\text{pl}]
\]

The rule above disassociates the [+pl] feature originally anchored to the clitic (Cl). This feature can then be realized in another position. In order to constrain the application of fission, McGinnis adopts the Minimalist position that syntactic movement is triggered solely by the attraction of features to a head which bears matching features that require checking. She extends this approach to morphology, claiming that morphological fission, like syntactic movement, is triggered by the requirements of feature checking in the MS, which comes after and is independent of checking in the syntax.

Checking in the MS involves only word-internal elements. Therefore, affixes can move to check various features if the syntactic component has not left them in the correct configuration, but morphological fission cannot move independent words. For example, an inflectional affix can be moved by fission in the MS, but an inflected DP with a lexical Noun cannot be moved by any MS process. Therefore,
unlike the situation in the syntactic component, multiple copies of lexical categories cannot be created in the morphological component.

Once attraction and feature checking are introduced into the analysis, the nature and scope of checking domains becomes crucial. In the present analysis, I follow Chomsky (1995:177ff) in defining the checking domain of a head as the “minimal residue” of that head. This includes everything contained in the first maximal projection dominating the head, less the complement and projections of the head. Therefore, maximal projections delineate checking domains; in order for features of a head to be checked, no maximal projection may intervene between the attractor and the element that bears the matching features. If a maximal projection does intervene, the checking element must move into the checking domain of the head.

3.2 Imperfect prefixes and suffixes - feature specification

In this section, I present a discussion of the sets of features associated with the prefixed conjugation prefixes and suffixes. The Imperfect verbal paradigm from (1) above is repeated below as (10) for convenience:

10. Qal Imperfect - root /ktb/ - 'will write'
   a. yi-xto:v  3sg, masc  
   b. ti-xto:v  3sg, fem  
   c. ti-xto:v  2sg, masc  
   d. ti-xtv-i:  2sg, fem  
   e. ?e-xto:v  1sg  
   f. yi-xtv-u:  3pl, masc  
   g. ti-xtv:vma:  3pl, fem  
   h. ti-xtv-u:  2pl, masc  
   i. ti-xtv:vma:  2pl, fem  
   j. ni-xto:v  1pl

I propose the following underspecified feature specifications for the three prefixed conjugation suffixed Vocabulary items /-i:t/, /-u:t/, and /-na:t/.

11. prefixed conjugation suffix feature specification
   a. /-i:t/   [+2,+f]
   b. /-u:t/   [-1,+pl]
   c. /-na:t/   [-1,+f,+pl]

/-i:t/ is specified as [+2,+f], as 2nd person must be specified to prevent this suffix from attaching to the 3fs [tixto:v] and [+f] is required to prevent the same situation with the 2ms [tixto:v;vma:] is specified for [+pl], to ensure that it attaches only to plural forms. It also has a negative specification for 1st person, to prevent it from attaching to the 1cp [nixto:v]. /-u:t/, like /-na:t/, is [-1,+pl], as well as [+f]. The addition of the gender feature ensures that /-na:t/ is more highly-specified than /-u:t/. Therefore, /-na:t/ will win in a competition for insertion to a node specified for non-

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3. The present paper was written before I became aware of Ritter's (1997) work on the Arabic prefixed conjugation, in which she introduces a fully underspecified feature geometric approach to phi-features, in which defaults are not specified and 3rd person may not be referenced at all. The analysis in the present paper assumes partial underspecification; that [masculine], [3rd person], and [singular], as defaults, are not present in the set of features encoded by inflectional morphemes.
1st-person, feminine, plural. 1st person singular and plural, as well as 3ms, 3fs, and 2ms forms, have no suffixes.

The specification of the prefixed conjugation prefixed Vocabulary items is reasonably transparent, and most require reference to only one feature:

12. prefixed conjugation prefix feature specification
a. /e-/ [+1]
b. /ni-/ [+1,+pl]
c. /ti-/1 [+2]
d. /yi-/ else
e. /ti-/2 [+f]

As 1st person forms have no gender distinction, the 1st person prefixes can be specified simply as [+1] - /e-/ and [+1,+pl] - /ni-/.

Note that the plural specification on /ni-/ is the only reference to number required for prefixed conjugation prefixes; all other plural marking is indicated by suffixes. The prefixes referring to [+f] and [+2] are homophonous, both [ti-]; therefore, the specification of prefixes on 2nd person feminine forms is ambiguous (see below). /yi-/ is used only with 3rd person masculine forms. I suggest that this is the default prefix, which is used when no other is compatible due to conflicting feature values (note that all other prefixes are specified for either [+f] or non-3rd-person).

As mentioned in the introduction, one of the problems to be addressed in the present paper involves the association of two sets of phi-features with the prefixed conjugations, which are instantiated as prefixes and suffixes. One might ask whether sets of discrete subsets of these features could be confined to either pre- or post-position; i.e. perhaps the prefixes could refer only to person, while the suffixes referred to other features. However, this is not a viable approach. For example, in the discussion of the prefixed conjugation suffixes above, it was pointed out that the /-i:/ suffix associated with 2fs [t.i:xt øvi:] must make reference to both [+f] and [+2], in order to block the association of this affix with either the 2ms or 3s forms. Equally, however, the prefixes must also make reference to [person] and [gender], as discussed above.

Double marking holds not only of prefixed conjugation prefixes and suffixes as classes, but also of individual forms; identical features can appear in both prefix and suffix position on one prefixed conjugation verb. This is the case with the 2nd person feminine forms 2fs-[t.i:xt øvi:] and 2fp-[t.i:xt]: Both of these bear the homophonous /ti-/ prefix, which could be either /ti-/1:[+2], or /ti-/2:[+f]. These prefixes cannot refer to anything else, as the only other possibility is [number], but both the singular and plural forms bear the same prefix. The singular form bears the suffix /-i:/, which refers to both possible values for /ti-/ [+2] and [+f]. Thus, no matter which /ti-/ is affixed to these forms, both prefix and suffix must refer to an identical specification for [person] (2nd) or [gender] (feminine).

The precise specification of the phi-referring suffixes associated with the suffixed conjugations and other verbal and non-verbal lexical classes in TH is not crucial to the present discussion. As well, a full treatment of this question deserves lengthy discussion, which is presented in Balcaen (1999). For these reasons, I adopt a fully-specified representation for all suffixes, other than those associated with the prefixed conjugations, in the present paper.
3.3 The morphosyntactic representation of inflection in TH

In this section, I present an analysis of the morphosyntax of TH inflection on finite verbs. The following discussion of the syntax of TH abstracts away from matters such as transitivity; the focus will be on the relationship between DPs (as inflection) and the verb. As well as the features discussed in §3.2 above, all phi-referring Vocabulary items must also be specified for the lexical class to which they attach. For verbal affixes, I take this specification to be a Tense feature.

In the present paper, I accept the position put forth by Ritter (1995:403), who proposes that “... the same nominal functional categories that act as pronouns also act as agreement. In other words, the difference between pronouns and agreement lies not in their category, but in their role in the syntax.” I extend this observation to include all DP’s. Therefore, I propose that clausal word order (i.e. SVO, VSO) can be used to infer the position of inflectional elements in the syntactic component of the grammar. The question of the precise way in which agreement features on lexical nouns are syntactically related to those attached to verbs is an interesting one, but lies outside the scope of the present paper. The question of whether the finite verbal system in TH is tense or aspect driven is also a matter of some debate. I will here adopt the simplifying assumption that T can be used to represent either.

I assume the following representation for simple transitive finite clauses in TH:

13. Tiberian Hebrew verbal clause

```
T
  /\      
 V-T     v
    /\      
  DPs  v     v
      /\      
     v     vmax
      \     
       \   
       \  
       DP0
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Not surprisingly given that TH is inflected, word order in the clause is variable, but the basic order in finite verbal clauses is VSO (Waltke & O’Connor 1990:128ff). Therefore, I will adopt the simplifying assumption that neither the subject nor the object move overtly. However, as there is agreement between the Subject and Verb, the Subject, at least, must move up to check the D feature on T covertly. V moves overtly, first to v, and then adjoins to T in order to check the strong V feature on T.

This is the representation that the syntax presents to the MS. I assume, in keeping with H&M’s observation above (§3.1), that the head-to-head adjunction of V with T is equivalent to a merged construction in the MS. Thus, all semantic and morphosyntactic features associated with the verb are under one category label. I propose that only those items that are within the category label of T are included in verbal stem formation. Therefore, if no further movement takes place within the MS, only the root, binyan vowel melody and other affixes, and Tense affixes will be intercalated to form a single stem. For example, in binyanim like the Niphal (§3.3:(6)), the derivational verbal class prefix /ni-/ refers directly to features associated with the V-T complex. Therefore, it is included in the stem when the root and vowel melody are intercalated.
I propose that movement within the MS places a copy of the \textit{phi}-features within the category label of \textit{T} with prefixed conjugation verbs. Therefore, the Vocabulary item, a prefix, associated with this set of features is also included in stem formation. The following account thus answers one of the questions posed in the introduction to the present paper: Why are the \textit{phi}-referring prefixes associated with the prefixed conjugations included in the stem, while all other \textit{phi}-referring elements attach to a fully-formed stem?

The analysis will begin with a discussion of the suffixed conjugations. For reasons to be discussed in §4, no feature associated with suffixed conjugations requires word-internal checking by a feature associated with the DPS, so no further movement occurs in the MS. Therefore, the morphosyntactic structural output of the MS remains the same as the input. In the example in (14) below, the stem is formed from the root \textit{ktb} and the Qal Perfect vowel melody /a/, which are the only Vocabulary items inserted under the V-T complex. This produces a stem /katab/. There is only one \textit{phi}-referring terminal node for which \textit{phi}-referring Vocabulary items compete for insertion, and this is not under the category label of \textit{T}. Therefore, the Vocabulary item, /-t/, that matches the \textit{phi}-features in the syntactic representation is not included in stem formation.

14. Qal Perfect vocabulary insertion - [\textit{ka:Qa}:t']you (fs) wrote'

However, the V-T complex associated with the prefixed conjugations bears a feature that requires checking by a feature on the DPS in the MS (§4). The structure provided by the syntax to the MS does not provide a checking configuration between the V-T complex and DPS, as \textit{vmax} intervenes. Therefore, features of the DPS, including the \textit{phi}-features, fission off of DPS to merge with V-T and create a checking configuration:
15. Word-internal feature checking - prefixed conjugation

This movement must involve merger rather than fusion, as the moved phi-features are instantiated as a discrete prefix.

The movement in the MS creates two copies of the phi-features, both of which are filled through competition among the members of the sets of prefixed conjugation Vocabulary items specific to each node. As shown in the example of a Qal Imperfect in (16) below, one of the copies of the phi-features is now under the category label of T. Therefore, the Vocabulary item, /ti-/, that wins in the competition for this node is included in stem formation, along with the root ktb and the Qal Imperfect vowel melody /ol/, producing the stem /tiktob/.

16. Qal Imperfect vocabulary insertion - [ti\textbackslash t\textbackslash t\textbackslash v\textbackslash i\textbackslash : ] 'you (fs)will write'

As with the suffixed conjugation discussed above, the position for which the phi-referring suffix items compete in (16) is not under the category label of T. Thus, the winning Vocabulary item, /-i/, is affixed to the fully-formed stem.

4. Tense/aspect and feature strength

As well as offering an explanation for the inclusion of inflectional prefixes within the stem, the analysis in §3.3 also accounts for presence of inflectional prefixes and the double marking of phi-features on prefixed conjugation verbs. I have proposed that, due to the requirements of feature checking in the MS, the phi-features that the syntax leaves on the right side of the word move to merge with the V-T complex. As this process creates two full copies of these features in the representation, both are available for Vocabulary insertion. Either or both sets of items are free to reference the same set of phi-features, even if these are associated with a single form.
However, the core of the question has not been answered: why are the prefixed conjugations the only classes in TH that require word-internal feature-checking? In §4.1, I present a brief discussion of historical and other evidence that bears on the question of the unique status of the prefixed conjugations in TH. An account of the motivation for fission in these verb forms, and the lack of it in the suffixed conjugations, is presented in §4.2.

4.1 Evidence for the special status of prefixed conjugations

Historically, all finite verbal inflection in the Semitic languages may have involved only prefixes, while all other phi-referring elements were restricted to the right side of the word (Waltke & O’Connor 1990:§29 and 496ff). The descendants of these conjugations in TH are the two prefixed finite verbal conjugations, the Imperfect and Waw-Imperfect. The suffixed conjugations, in contrast, may be historically derived from a nominal class or perhaps a non-finite conjugation.

Evidence for the historically derived verbal status of the suffixed conjugation inflectional suffixes, as opposed to the historically purely verbal status of the prefixed conjugation inflectional morphology, can be found by comparing these forms, from examples (1) and (2) above, with the independent subject pronouns in (17) below, which are used only for focus and emphasis:

17. Independent subject pronouns
   a. hu: 3sg, masc f. he:m 3pl, masc
   b. hi: 3sg, fem g. he:nna: 3pl, fem
   c. ?atta: 2sg, masc h. ?attem 2pl, masc
   d. ?att 2sg, fem i. ?atten 2pl, fem
   e. ?a*ni: 1sg j. ?a*na nu: 1pl

In the 1st and 2nd person, the suffixed conjugation inflectional suffixes are transparently derived from, or from the same source as, the independent subject pronouns. The prefixed conjugation inflectional system, in contrast, bears little resemblance to the independent subject pronominal system.

There is also evidence that the prefixed conjugations are associated with a greater range of verbal features than the suffixed conjugations. For example, volitional mood (cohortative, imperative, and jussive) is associated only with prefixed verbal forms. Some verbal classes also retain traces of tense/aspect features originally associated only with prefixed forms. Traces of these features are also apparent in poetry, where prefixed forms are often used in positions where one might expect to find a suffixed form.

4.2 Strong and weak features in the MS

I assume, following H&M (1994:276), that the MS obeys the same general principles and constraints as the syntax. Therefore, we may expect to see the effects of another syntactic element proposed within Minimalist theory, feature strength, within the MS. In the syntactic component, strong features must be checked overtly, but weak features can wait until LF (Chomsky 1995). In this section, I propose that in the MS, as in the syntax, some features are weak and some are
strong, on a language-specific basis. I also propose that strong features must be checked in the MS, but weak features do not require checking. Unlike the syntactic component, there is no analog to LF in the MS, and there is therefore no covert movement in the MS: features are either checked overtly or not checked at all. In keeping with the assumption that the morphosyntactic component obeys the same general constraints as the syntax, features should not change in strength between the syntactic component and MS. Therefore, features that are strong in the syntactic component should also be strong in the MS.

In the discussion of morphosyntactic representations in §3.3 above, the feature(s) that required checking in the MS were not identified. If features bear the same value for strength in the syntax as in the MS, the \textit{phi}-features cannot be the ones that require checking. If the \textit{phi}-features on the verb do not require checking in the syntactic component, as shown by the lack of movement of the Subject and Object, they should not require checking in the MS, either. The assumption that the \textit{phi}-features require checking also does nothing to account for the difference between the suffixed and prefixed conjugations, as the same person, number, and gender features are referenced by both conjugations.

There is a feature associated with the V-T complex that could trigger movement in the MS without compromising the assumption of a direct relationship between feature strength in the syntax and in the MS; the inherent T feature associated with T. There is no firm evidence as to its strength in the syntax, as there is no need to invoke this feature to account for any movement. For example, the movement of V in (13) could be accounted for by a strong V feature on T, not the T feature itself. However, it is equally possible that T is strong, and that both V and T attract and are checked by V.

\textit{phi}-referring elements in TH must be specified for the class to which they attach, as there are several distinct sets of inflectional affixes in TH. The simplest way to specify this for the DPS in a finite verbal clause is to include a T feature in its specification. Note that this specification is necessary only for inflectional elements, not lexical DP’s, as there is no difference in the position of lexical DP’s in Imperfect or Perfect clauses.

I propose that there are both weak and strong T features associated with finite verbs in TH. I will not attempt to specify precisely what these features may be, as this would require a full discussion of the differences between the conjugations within the prefixed and suffixed conjugation classes, which is a subject of intense debate. Instead, these will simply be referred to as [+Suffixed] and [+Prefixed]. [+Suffixed] is weak, and thus does not require checking in the MS. [+Prefixed] is strong, and attracts the DPS to the V-T complex in the MS. The strength of [+Prefixed] is the result of its historical derivation from the verbal system of the language which gave rise to TH, in which all verbal inflectional morphology was prefixed (§4.1).

Recall that in McGinnis’ (1995) formulation of DM, fission need not split a feature bundle; rather, the entire bundle may move. If the T feature associated with the DPS is attracted to the V-T complex in the MS, the \textit{phi}-features also associated with the DPS are carried along as free riders. Regardless of how these features arrived in this configuration, there will now be two copies of the same set of features for Vocabulary items to compete for, as discussed in §3.3. Movement triggered by a T feature, rather than the \textit{phi}-features themselves, thus accounts for
the fact that the determining factor in whether or not a verb has an inflectional prefix is its tense/aspect.\textsuperscript{4}

5. Conclusion

As noted above (§2.4), previous attempts to account for the morphological differences between prefixed and suffixed verbal conjugations in TH have involved unmotivated stipulations and unexplained exceptional treatment of prefixed forms. The analysis presented above has provided an historical and structural explanation for the unique morphology of the prefixed conjugations, as well as an account of the morphosyntax of the suffixed conjugations.

Two aspects of DM, as formulated by Halle & Marantz (1993:1994), have been crucial in the analysis. Features referenced by the Vocabulary items inserted in the MS may be subsets of those manipulated by the syntax, and these Vocabulary items are inserted only after the syntactic and morphosyntactic computations are complete. McGinnis (1995) introduces two elements from Minimalist syntactic theory. She motivates fission by positing the requirement of feature checking in the MS as well as the syntactic component, and presents fission as a process which copies, rather than splits, feature bundles. These four aspects of the theory of DM allow for the association of two separate affixes with one form even if both affixes reference the same feature, as discussed in §3.2 and §3.3.

If morphemes, complete with all phonological and other features, were inserted as the syntactic structure was being formed, we would expect that a given feature would be referenced only once by the morphology. Alternately, the morphological component could be capable of copying a fully-specified morpheme into two positions. However, if this morpheme contained phonological information, the two copies should resemble each other, which is not the case in the prefixed conjugations in TH; inflectional prefixes and suffixes display no phonological resemblance. These points are good evidence for late insertion of Vocabulary items. McGinnis’ introduction of feature copying provides the motivation for the presence of two discrete affixes in the prefixed conjugations; as the morphosyntactic representation contains two copies of the same set of \textit{phi}-features, these are both available for Vocabulary insertion.

The innovation introduced in the analysis above is the Minimalist position regarding strong and weak features. I have claimed that only strong features require checking in the MS, and only those features that are strong in the syntactic component may attract features in the morphosyntactic component. This serves to constrain fission, as the only feature bundles that can move in the MS are those that

\textsuperscript{4} The association of different morphosyntactic processes with different verbal classes in a single language is not unusual. For example, the morphology associated with Germanic strong and weak verbs shows striking parallels with the TH system discussed above. In English, strong verbs form their preterites (past, past participle) by gradation, eg. drink, drank, drunk, which involves the insertion of a vowel into a root. Weak verbs form their preterites by the addition of the dental suffix to an unchangeable stem, eg. look, looked. An analysis that invokes a strong \textit{T} feature on strong verbs, which triggers fusion (rather than merger) under \textit{T}, seems like a promising approach to this question. Note also that the dichotomy between strong and weak in Germanic verbs also has a historical basis; strong verbs are from the Indo-European word-stock, while the dental suffix is Germanic (Pyles & Algeo1982:125ff).
contain a feature that is attracted to and checks a strong feature. In terms of TH morphology, this position provides some motivation for the prefixed and doubly-marked phi-features on the prefixed conjugations, while all other phi-referring elements in TH are restricted to suffixes. I have claimed that the prefixed conjugations involve a strong feature which triggers movement in the MS, while the suffixed conjugations do not. I have also proposed that only those vocabulary items under the category label T are included in stem formation.

Several questions arise out of the analysis presented here. The most important in terms of the analysis of TH is the nature of the features that were indicated only by [+Suffixed] and [+Prefix] in the discussion in §4 above. The most important theoretical question is whether the restriction on movement in the MS to that involving strong features holds in languages other than Tiberian Hebrew.

References


